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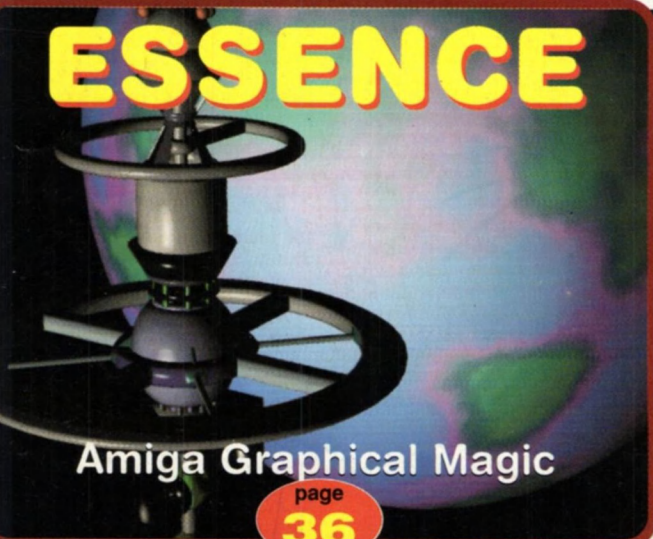
# amiga

u s e r  
INTERNATIONAL

*The Best Amiga Magazine.*

**£3.25**  
MAY/JUNE 1993

## ESSENCE



Amiga Graphical Magic

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10 Things  
You Need To  
Know  
COMI

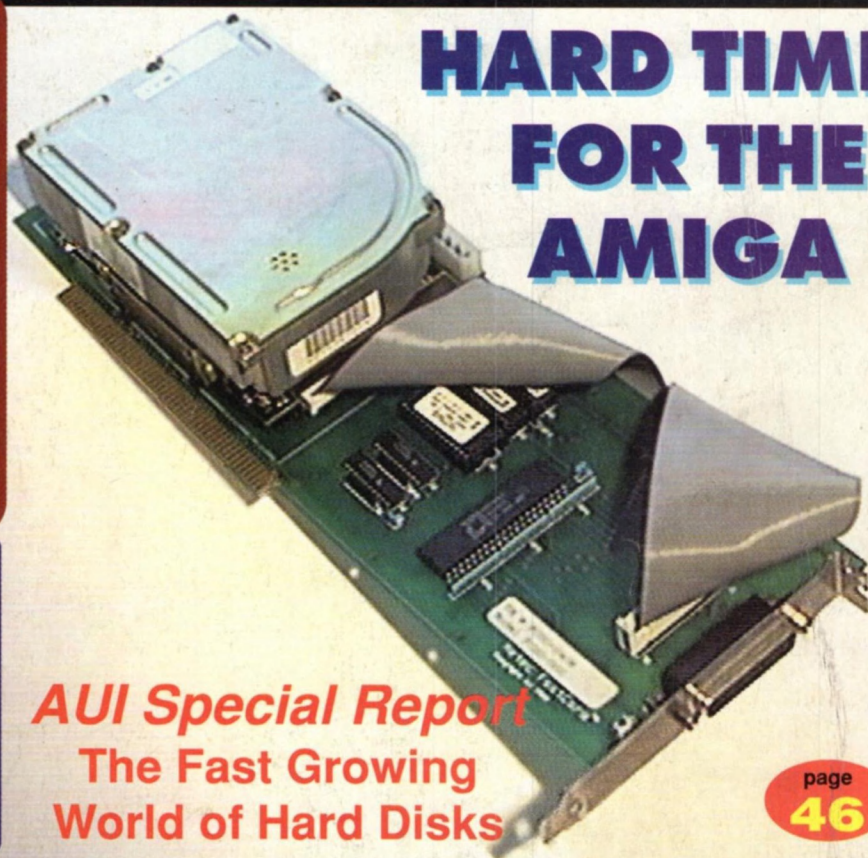


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*AUI Special Report*  
The Fast Growing  
World of Hard Disks

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**SUPERDISK 23**

Crammed full of goodies!  
**Onekey II** Updated version of  
this handy keyboard utility  
**IFFWizard** Analyze the structure  
of IFF files  
**YAK** Improve Workbench 2 with  
this utility  
**Envprint** Makes printing  
envelopes easy  
**Mathvision** The full review and  
pictures!  
Plus **Replex**, **TTDDD** and  
more!

amiga  
User International

1MB RAM REQUIRED. Check Coverdisk pages for compatibility

**No Disk?**

**Ask Your Newsagent!**  
**Or see the Superdisk**  
**page 8 in this issue.**

**EXCLUSIVE!**  
**The Amiga's  
Future**



Commodore's  
Engineering  
Supremo  
Speaks

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**First Steps on the 1200**

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**ENTERTAINMENT  
NOW!**



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**90**



**Win a Super Citizen Sprint 240C Colour Printer in our easy competition!**





# THINKING

SEE PAGE NINE





# 24 BIT ?

CHARTSCREEN (UK) LTD





# amiga

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I N T E R N A T I O N A L

The First and Best UK Amiga Magazine

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liability for any incorrect statement or errors  
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from time to time.

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## ...And What They Used

Amiga Centre Scotland's Harlequin graphics  
card and VLab, Arnor's Protext, ASDG's Art  
Department Professional, Cygnus Ed and  
MorphPlus, Canon's BJ-20 Bubblejet, Com-  
modore's Amiga A3000, A2000, A1200 and  
A500, Consultron's CrossDOS, Electronic  
Art's Deluxe Paint IV, Fujitsu's 550MB hard  
disk, GVP's IV-24 and A530 Turbo,  
Innovatronic's CanDo and Directory Opus,  
JCL's ColourPic Plus and Cabaret, John  
Veldthuis's Virus Checker, JVC's HR-D980  
Video Recorder, Micro-System's Scribble!,  
OpalTech's OpalVision, Sony's CCD-V600  
Camcorder, Tecsoft's TVPaint, 32 Bit RAM  
from First Choice Computers.

## AUI

*Amiga User International was  
first published in 1986. No other  
Amiga magazine had, at that time,  
been published in Europe. It is  
now come under new ownership  
and intends to continue as the  
best all round guide to the Amiga  
scene.*

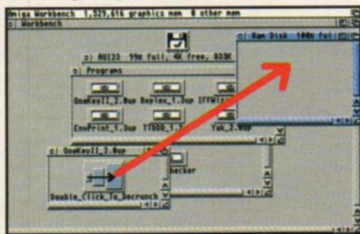
## CONSTANT FACTORS

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Managing Editor Anthony Jacobson  
comments on the ever changing  
Amiga product line and  
Commodore's new openness.

### 6 The AUI SuperDisk

If you want some of the latest  
utilities on the Amiga scene here is  
where you get them - free.



### 10 The NewsFile

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tells you what it wants you to know  
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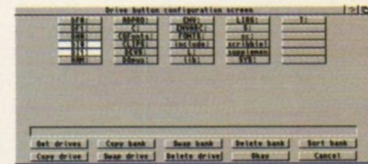
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Lew Eggebrecht is the name on  
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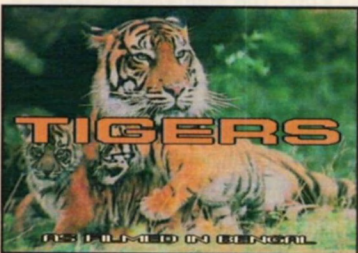
Martin Witton

constructs some words and also finds some tips on how to fly planes in the Second World War. That's edutainment, folks!



## 61 1st Steps in Video

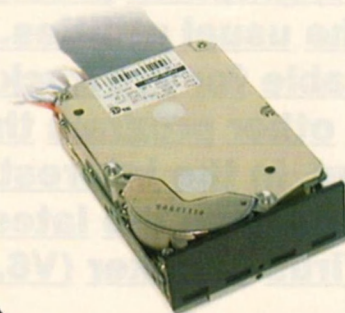
Alan Puzey leads you gently along the path to fame and fortune. You too can be a Steven Spielberg or even a Gary Fenton!



### SPECIAL FEATURE

## 46 - 53 Hard Times for the Amiga

An AUI special gives you the basic knowledge you need to understand the burgeoning Amiga hard drive scene in all its exciting potential. Mike Nelson, Aitor Ibarra and Oliver Davies provide the expertise.



## 64 1st Steps on the 1200

The new CBM baby is not as easy as it seems but Mike Nelson explains it simply.

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### Entertainment Now!

**BAT II** - UBIsoft, **BC KID** - UBIsoft/Hudsonsoft, **Indiana Jones and the Fate of Atlantis** - US Gold/Lucasfilm, **The Bards Tale Construction Set** - Interplay, **Discovery in the Steps of Columbus** - Impressions, **The Chaos Engine** - Bitmap Brothers/Renegade, **International Tennis** - Zeppelin Games, **Carnage** - Zeppelin, **Crystal Kingdom Dizzy** - Codemasters, **Heroquest** - Gremlin/GBH, **Video Kid** - Gremlin/GBH, **Robin Hood** - Codemasters



There are always plenty of rumours on the Commodore scene. The new 4000-030 which has now been announced officially has long been a discussion point among those who claim to know what's coming for the Amiga. It's an odd development, going back to the 030 chip after creating a machine equipped with the 040 has already appeared. But this is by no means an unusual step for a computer company to take.. The SX/DX situation for the Intel 386 chip was the same. First, the hyped up introduction of the faster, dearer version and then the cheaper one comes out - possibly the one that customer can really afford.

With the 4000-030 Amiga Commodore seems to have taken the same view. For under £1000, you have now all the delights of the new chipset and only a slightly slower machine which still, CBM maintains, will be ideal for such future hot spots as multimedia.

That was one rumour confirmed. However, another that is buzzing around to such an extent that the harassed Commodore people in the know - and the developer community who have been sworn to secrecy - must be fed up with being asked about it by inquisitive press people like us, is yet to be officially let out of the bag. This rumour is twofold. First, that there is an Amiga with the new chipset containing a CD drive stacked up on the shelves of Commodore storehouses just waiting to hit the shops. And second, that all the present Amigas in the range are about to be equipped with CD drives.

Ho hum, do I hear you say? Nothing much new? No, it may not be totally out of the blue but this time the rumour is coming from so many sides that it is difficult to believe that there isn't a really solid foundation for it. And about time too. The CD revolution is already well under way and Commodore brought out the A570 what seems like a long time ago now. Why so long without any more Amiga CD drives? Maybe Commodore likes to set us riddles..

But as the fascinating exclusive interview with Lew Eggebrecht, CBM's Boss of Engineering in this AUI indicates, Commodore's times may at last be a-changing. CBM seem likely, with the highly sensible views expressed by Lew Eggebrecht, to be opening themselves up and actually letting everybody know what's going on. There really has been in the past too much secrecy, some of which has always appeared to be out of neurosis rather than commonsense confidentiality. It's good to see someone in charge who can have the confidence that the products can stand up for themselves.

And talking of unnecessary secrecy, we recently received a review copy of a piece of software with a Non-Disclosure Agreement attached! What do they want to us to do, not mention it? Then why send it for review? The computer world is certainly a strange place...

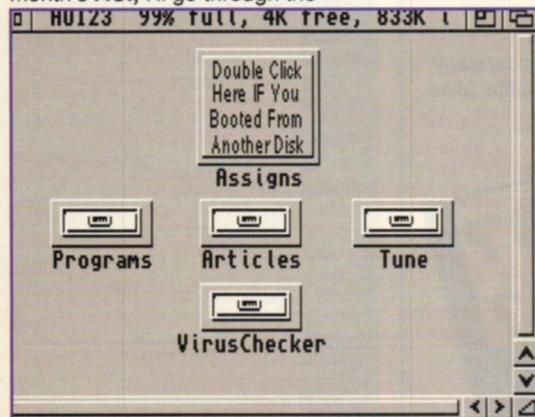
Antony Jacobson  
Managing Editor



# au! Super

The method of decrunching the programs has been made slightly easier than last month so that when you decrunch them they will create their own drawer. This saves you having to create one for them.

Just in case you didn't get last month's **AUI**, I'll go through the



**This month we have a review of an exciting new mathematics/graphics product - Mathvision - as well as the usual utilities. There's also a module suitable for ProTracker (on last month's disk) or any other program that can play modules. And, in the interests of infection free computing, we have the latest version of John Veldthuis' Virus Checker (V6.22).**

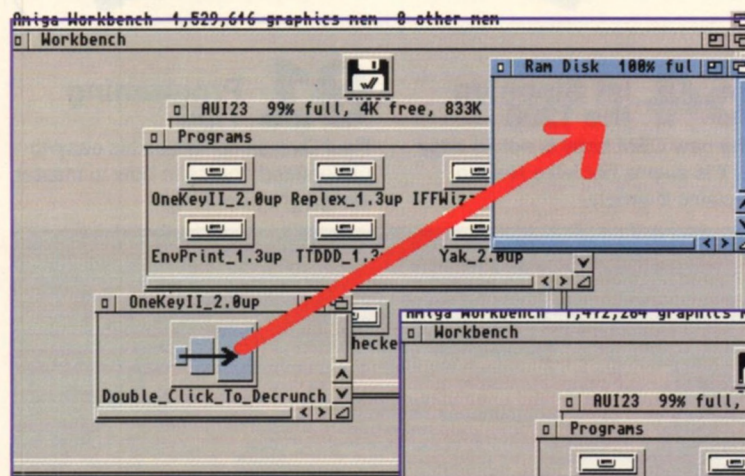
decrunching procedure again now. Experienced users should note that everything has been crunched with Lha - and the archived files are in AUI23:Programs/CrunchedFiles.

Firstly, prepare some disks for the programs. They decrunch to about 1.2 Mb so you'll need two formatted disks or space on your hard drive. If you've got enough RAM, I suggest you decrunch to your Ram disk, as then you can 'test drive' the programs before deciding to save them to floppy or hard disk. Also, if you only have one floppy drive and no hard disk, using the RAM disk will save a lot of disk swapping.

We've produced the disk so that you can use it if you've booted from another disk; but you can boot from the AUI disk if you prefer. If you do not boot from the AUI disk, make sure you double click on the icon labeled 'Assigns' (the actual icon is designed with the text 'Double Click Here IF You Booted From Another Disk') - if you don't the decrunching will not work.

## DO NOT

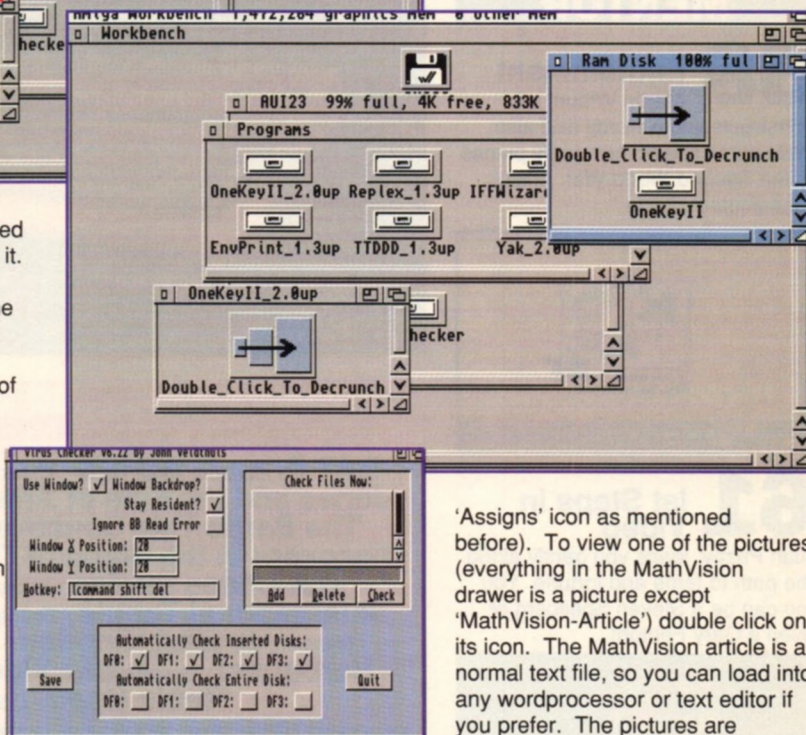
double click on the icon labelled on 'Double\_Click\_to\_Decrunch' - this will decrunch to the AUI disk. Drag the icon to where you want to decrunch and then double click on it.



Now open up the drawer called 'Programs' by double clicking on it. A window with several more drawers will appear. There is one for each program. The name of each drawer name has a suffix which tells you which version(s) of Workbench with which they are meant to be used. '\_1.3up' is for Workbench 1.3 and above, '\_2.0up' is for Workbench 2.0 and above. Open the drawer of the program you want. Then open up the drawer/disk to which you want to decrunch. Drag the icon called 'Double\_Click\_to\_Decrunch' to the drawer/disk that you want to put it in. Then double click on the icon. The program will be decrunched in that location, and a new drawer for the program and any supporting files will be created. If you are using Kickstart/Workbench 1.3 you'll have to close and then reopen the window to see

disk!). If you want to copy the program to another disk, simply drag the drawer icon there.

The MathVision article is not crunched. To read it, simply double click on the icon called 'MathVision-Article' - it's in the MathVision drawer which is in the Articles drawer. (If you have booted from a disk other than the **AUI** disk, be sure to have double clicked on the



the new icon. On Workbench 2.0 or higher just select Update from the menu. Delete the 'Double\_Click\_to\_decrunch\_Icon' (from YOUR disk, NOT the AUI

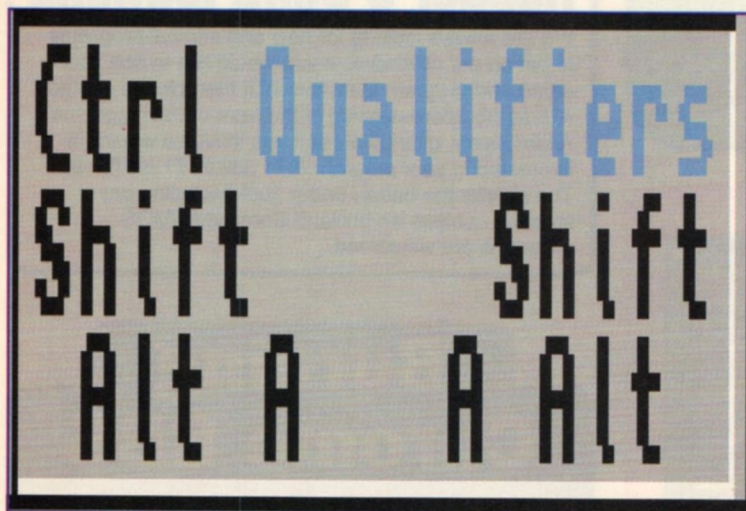
'Assigns' icon as mentioned before). To view one of the pictures (everything in the MathVision drawer is a picture except 'MathVision-Article') double click on its icon. The MathVision article is a normal text file, so you can load into any wordprocessor or text editor if you prefer. The pictures are standard IFF, so can be loaded into any Amiga paint program.

The 'PaulOveraa' drawer contains code to accompany his series of articles in the paper based part of the magazine.



# HardDisk 23

## Replex



If you've ever tried to read a text file by double clicking on its icon, and then found that you don't have the text viewer specified in the icon's tooltypes, or worse, that you do but it's in a different location, do not despair! You no longer have to change the tooltypes! Simply use Replex, which substitutes a request for one program with another. There are plenty more uses than the one I just outlined for this smart little utility. It will work on all versions of Kickstart/Workbench from 1.3 upwards.

## OneKey II

This is a rewrite of the Carolyn Scheppner (of CATS fame - no, not the musical, CBM's Tech Support people) OneKey which we included on a previous disk. It allows you to type characters that normally require more than one key press (such as shifted characters) by pressing the qualifier keys one by one and then the actual key. So if, for instance, you want to type an upper case A, you would press the shift key and then the A key. This program would be useful if you are a very slow typist or have difficulty using both hands. The original version crashed under Workbench 2.1, this rewrite will work on all Workbench/Kickstart versions from 2.0 up. It was rewritten and submitted by Martin W. Scott.

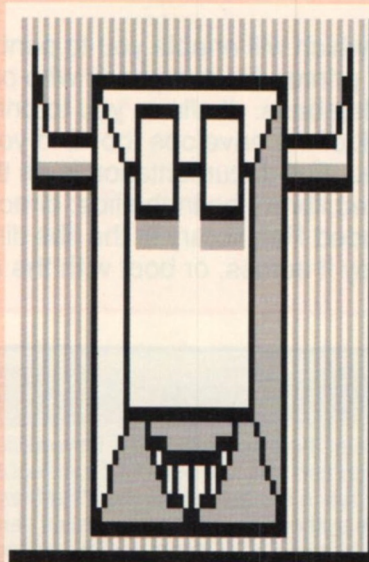
## TT DDD

This is a really helpful utility for users of Imagine and Turbo Silver. These programs store their object files with a special IFF subset - TDDD (3D Data Description). It allows you to create a text (Textual TDDD!) file containing all the information normally in the TDDD file. This allows you to create objects that would normally be impossible or at least very difficult to create within Turbo Silver or Imagine - such as mathematically precise shapes - within a text editor and then convert them into TDDD format.

## WIZARD



This is a really useful utility if you work with IFF files all the time or if you are just interested in their structure. It also makes a good companion to our article on the IFF standard in this issue. What it does is analyse an IFF file and report which types of data are stored within. It can recognise many different FORM and CHUNK types and tell you what they are, or just tell you their names if it doesn't recognise them.



## Yak

This is another submission from Martin W. Scott - a general purpose commodity for Workbench 2.0 and up. It does mouse acceleration, screen blanking, automatic window activation and so on. It supports localization for English and French.



### read the instructions!

If you get stuck with a program you will probably find the answer somewhere in the documentation. That's why it is best to read the official documentation that comes with the programs on the Coverdisk. Unless you have PPMore on your Workbench disk, you may not be able to read the documentation files unless you boot from the **AUI** disk. Alternatively, if you have the 'More' utility (it comes as standard on Workbench) you can change the default tool of each documentation file to 'More' instead of 'PPMore'. Do this via the Workbench 'Info' or

'Information' option. If you want to print out the text files, boot from your favoured word processor disk and load in the text files from there. Or, if your handy with the CLI, copy the file to par: (if your printer is connected the parallel port) or to ser: (if your printer is connected the serial port).

*By the way, if you get really stuck with the Coverdisk then please write in to AUI, not phone! Better still, as we always inform you if there have been any problems on previous disks, try to hang on until next month to see if the answer is there. Thank you. Have fun!*

## ENVPRINT

This is a handy utility which will enable you to print addresses for envelopes on your printer; for everybody who can't make the effort to set up a database. It allows you to print return addresses on the back of the envelope too, and you can save your addresses to disk. Full documentation is on the **AUI** disk. It requires that req.library be in the libs: directory of your boot disk - we've included Req.library in the libs directory of the **AUI** disk. Just copy it across, or boot with the **AUI** disk.

### shareware

Just a brief reminder that some of the programs on our Coverdisk are Shareware. This means that you can try them out, but if you regularly use them you should send a registration fee to the author. Registration fees are between £5 and £20 and sometimes the author will send you the latest version in return. You can send an International Money Order, or pre-ferably a cheque but many authors don't accept cheques if they are outside the UK. If you want to risk sending cash in a registered post, it's up to you. We wouldn't advise it but it's your money...

## Faulty Disk?

In the event that your AUI coverdisk fails to load (because of a read/write error etc), please return it to the following address for a free replacement. Allow 28 days for delivery.

**AUI Faulty Disks**, PC Wise, Dowlais Top Business Park, Dowlais, Merthyr Tydfil, Mid Glam, CF48 2YY.

Don't forget to include your name and full postal address in **BLOCK** capitals. Collector's tokens from the back of cereal packets are not required, thank you.

## Reader's Contributions

We are always looking for new and original programs to put on our coverdisk. If you would like to see your name and program feature in AUI then please contact **AUI** at the address given in the front of the magazine. Alternatively, give us a call if you think we would be interested in your program (071 388 3171 ext 6219). The shorter the better, under 100k including any libraries - unless it's brilliant! Compiled AMOS programs are welcomed.

## Burning Chrome BBS

Thanks to Simon Gardner who helped us to obtain some of this month's programs. If you have a modem you can contact Simon's BBS on 0428 727060 (19.2K HST DS+ V32bis). This is not a voice number so you can't make funny noises down the phone! This is a modem only number!

## COMPATIBILITY

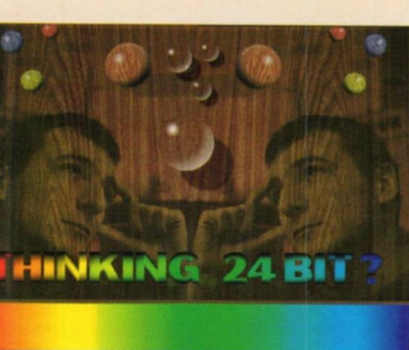
All of the programs on this month's coverdisk have been fully tested on an Amiga 500 with Workbench 1.3, an Amiga 3000 with Workbench 2.04, and an Amiga 4000 and 1200 with Workbench 3.0. If you think you have compatibility problems then please check to see if you have followed the instructions exactly.

## NO DISK?

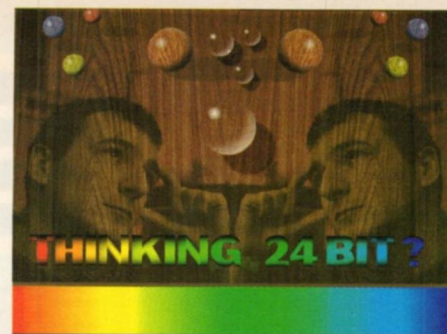
Yes, consult your newsagent! But we've had so many complaints about readers not getting disks that we're trying out a new idea. We can't be responsible for what happens at the end of a long chain of different organisations who handle the magazine when it leaves us, especially outside of this country. We know that someone appears to be taking disks off copies of the magazine in some countries but we don't know whether they are being stolen or taken off as a protection against a large sales tax having to be paid.

So what we propose is this: if you live in the U.K. you will have to consult your newsagent and get him/her to contact the wholesaler etc in the usual way. However, if you are outside the U.K. we want to help you get the advantages of the Superdisk so if you send us £1 in sterling (International Money Order etc) to cover postage etc and we will send you the month's Superdisk. Okay?





# Rainbow Grafix



"The artists Toaster" – Donn K,  
World of Commodore Show, New York, 1993

## Rainbow Grafix

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### FEATURES

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and 256 Alpha  
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over the  
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Silica's £199 Amiga

ADPro Upgrade

"Think" Training Courses

South Hams Recession  
Beater

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Modulator Shortage Solved

High Res for A1200 &  
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Foot Pedal - A Feet of  
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More Text, Less Memory

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Printing . . .

Address It!

Olympic Hopes Via The  
Amiga

Quote of the Month

Edited and compiled  
by Anthony Mael and  
Martin Witton



Any cheaper and they'll be giving them away!

## SILICA'S £199 AMIGA!

Well, it's finally happened . . . The Amiga can be bought for under £200! Those of us longstanding Amiga buffs can hardly believe it when we remember that our favourite computer came out at £1700 back in 1985 in the days of stone-age computing.

Silica Systems are the ones making history with a promotional offer on Amiga 500's and A600's. The A500 Plus will retail at £199.00, yes including VAT, and the A600 £249.00.

The Amigas are available from Silica's leisure centres in Central London, Sidcup, Southend and from the Mail Order Division (081 309 1111).

Silica are also offering a 2Mb version for £229.00 (inc. VAT) and included in the pack is a free Silica ZOOL pack (usual retail price they tell us £127.00).

In a second pack, Silica are offering the Amiga 500 Cartoon Classic pack at £229.00 (inc VAT) and throw in the ZOOL software compendium, GFA Basic and Photon Paint free. Wow! £199! For a new Amiga! Unbelievable!

**Contact: Silica Systems, 1-4 The Mews, Hatherley Road, Sidcup, Kent. DA14 4DX. Tel: 081 309 1111.**

## ADPro Upgrade

ASDG's ADPro now reads and writes images in the NewTek Video Toaster Framestore format with full broadcast colour and fidelity. Taken together with a direct memory link to Deluxe Paint 4.6, this ADPro upgrade, ASDG told AUI, ties together several of the Amiga's applications.

The new release provides a loader and saver which can read and write Framestores in full broadcast colour and fidelity. It does not need a Video Toaster, which increases the processing options available to those using Toaster images. **Contact: ASDG, 925 Stewart Street, Madison W1, 53713. Tel: 608 273 6585.**

## "Think" Training Courses

Think have arranged a series of Amiga training courses ranging from Beginners Guide to the Amiga, to multi-media, scanning and grabbing images and DTP. Some courses are limited to twelve places.

The cost is around £49.95.

For details contact: **Think Ltd, Prudential Buildings, 46c High Street, Erdington, Birmingham B23 6RH. Tel: 021 384 4168.**

THINK!

## SOUTH HAMS Recession Beater

South Hams have made their database program even cheaper - a "recession beater" they call it. Order v2.5 Relational Database is being offered at the new price of £19.95. This includes Program Disk, 200 page manual and 60 page step by step tutorial. If you want to keep track of anything at a recession beating price now is the time to do it.

**Contact: B Taylor, 2 Ford Road, Torre, Yealmpton, Plymouth. PL8 2NA. Tel: 0752 880906.**



# 1e

## AlfaScan with OCR

Golden Image is releasing AlfaScan – 256 Greyscale Scanner with Optical Character Recognition software for all Amigas.

The package includes – the latest hardware and software including: Migraph Scan & Save, Migraph Merge It and Migraph Junior OCR. The system requires 2Mb RAM and hard disk.

Scan & Save is a real time scanning software and also supports many file formats eg IMG, IFF, PCX, TIFF, etc. for importing/

exporting files to and from most of the painting and publishing packages.

Merge It software allows you to merge two images and Junior OCR has been designed to transform your computer and scanner into an efficient reading system according to Golden Image.

Price £149.00 inc. VAT (ex delivery charge).

**Contact: Golden Image (UK) Ltd, Unit 12a, Millmead Business Centre, Millmead Road, London N17 9QU. Tel: 081 365 1102.**

## MODULATOR SHORTAGE SOLVED

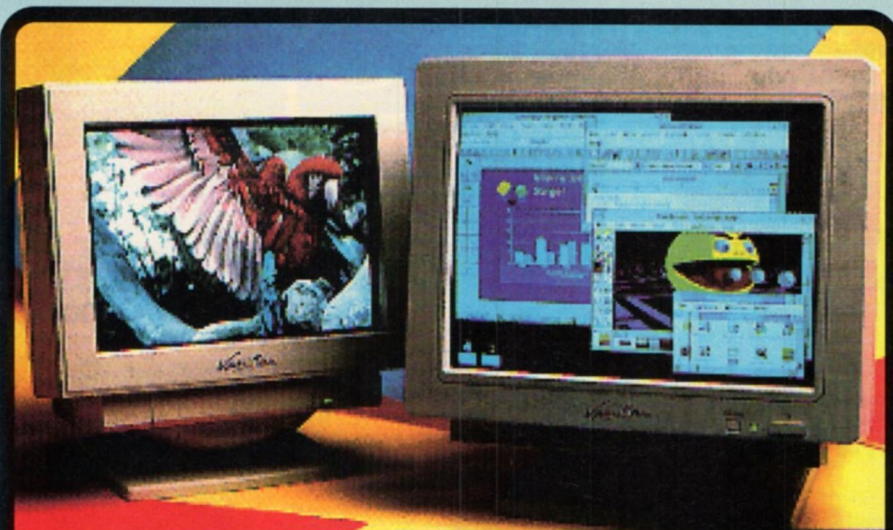
Trilogic are offering a TV Modulator repair service as they are concerned that there is a shortage of replacement TV Modulators since Commodore have ceased production – as the 600 and 1200 have built-in modulators. This, says Trilogic, has left many A500 owners with no means of using their computers unless they buy a colour monitor.

Simply send your broken Modulator to Trilogic with £19.99 + £1.00 p+p and they promise to repair or exchange it within two or three days.

Trilogic tell us that the most common cause of Modulator breakdown is due to it falling out of the video connector. To get round this problem, Trilogic have manufactured a Modulator Extension Lead priced at £10.99. This moves the Modulator away from the connector and makes inadvertent disconnection less likely, they claim. (They should see Nicolas and Victoria

fighting near the TV set!) The Modulator extension lead is p+p free if ordering when sending your Modulator.

**Contact: Trilogic, Unit 1, 253 New Works Road, Bradford BD12 0QP. Tel: 0274 691115.**



Vanilla could be big seller this summer

## HIGH RES for A1200 & A4000

New Horizon Computers have launched two new High Resolution Monitors capable of handling the AGA (AA) custom chipset built into the Amiga 1200 and A4000. The Vanilla range of monitors employ flat screen technology (FST) and are available in 15 inch and 17 inch screen sizes.

These hi-res FST monitors have a video bandwidth of 80Mhz and a dot pitch of 0.28mm to produce an exceptionally sharp, crisp picture, they claim, for DTP, graphics and design packages using the

Amiga high resolution modes.

The monitors conform to the new EC standards on emission and safety. They have swivel and tilt features and a front panel of controls.

At the time of going to press, NHC hadn't set the final prices but they told AUI that "The prices will be highly competitive". If you want to find out what "Highly competitive" actually means . . . **Contact: NHC (UK) Ltd., High Hope, Lea, Ross-on-Wye, Herefordshire. HR9 7LN. Tel: 0989 750260.**

## FOOT PEDAL – A FEET OF ENGINEERING!



"Give your feet something to do".

Spectravideo has designed a foot pedal as an enhancement to the joystick or Joy Pad. With multifunctional games in mind, particularly those with driving or flying features, the Foot Pedal is supposed to enable faster acceleration and braking. Possibly the safest place to put your foot down is under the computer table and it provides some unipetal – sorry, unilateral – exercise too!

Price £24.99 – cheaper than crashing your car . . .

**Contact: Spectravision, Tel: 081 902 2211.**

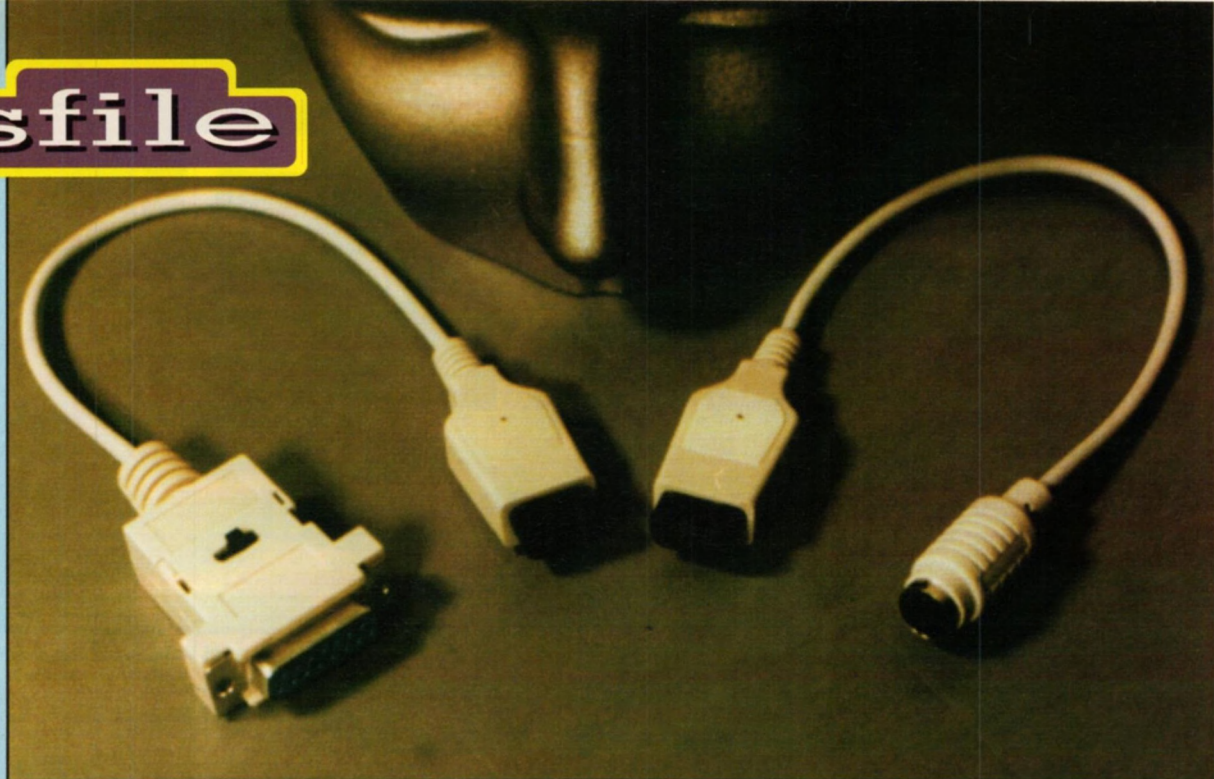


## Amiga Distribution For Micro-PACE

Micro-PACE UK Ltd has been appointed an official distributor of high-end Amiga hardware by Commodore UK. The move, the new distributor told AUI, "enables Micro-PACE to fulfil its mission to be an Amiga 'superstore' for UK dealers."

The company will stock the A4000, A3000 and other Commodore products such as multisync monitors and SCSI controllers. Micro-PACE UK is US owned and has been set up to provide a bridge between the US and European Amiga communities.

**For information, contact: Micro-PACE 0753 551888.**



Plug an IBM stick into your Amiga

## Analog Amiga Interface

You can now get an analog interface and mouse – IBM style – and use with your Amiga.

The DP IBM Analog interface has a three position switch to allow maximum compatibility with all existing analog games, has PC board circuitry and the factory moulded nine pin end fits all Amiga models. It allows access to many IBM analog joysticks with two buttons and

a pressure sensitive stick.

With lifetime warranties the IBM bus mouse combined with the DP Interface is compatible with the Amiga. The Bus Mouse offers pinpoint accuracy of 400 dots per inch and complements the Amiga's multi-tasking environment. **Contact: DigiPrint Inc., P.O. Box 13016, Richmond VA 23225. Tel: 804 560 1769.**



Budget colour printing from Seikosha

## Silica Recommend Seikosha

Silica Systems have announced that following positive testing and initial trials they are now recommending the Seikosha SL95 colour printer as the best budget, colour printer for the Amiga. The SL95 has an RRP of £189 plus VAT, has 9 resident fonts, 43K memory, paper parking and draft print speeds of 192cps. It is available from Silica Systems (mail order) 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX. Tel: 081 309 1111.

## CD 'Time Capsule' ... Buried!

A Kodak Photo CD disc, containing images of the Eurotunnel construction project was one of the artifacts buried in a time capsule on Friday 12th February 1993 at the ground breaking ceremony when work started on Eurotunnel's customer services centre at Cheriton Parc, Folkestone.

The time capsule – a hermetically-sealed stainless steel cylinder, two feet long and six inches in diameter filled with inert gas for the maximum protection of its contents – was buried six feet underground and will serve as a record of the project centuries into the future.

Photo CD technology is just starting to make its mark in the world of imaging. But will Photo CD players still be around when the time capsule surfaces?

Why didn't they put a CDTV disc in there too? At least there would be more than just pictures.

## BLUE RIBBON MOVES

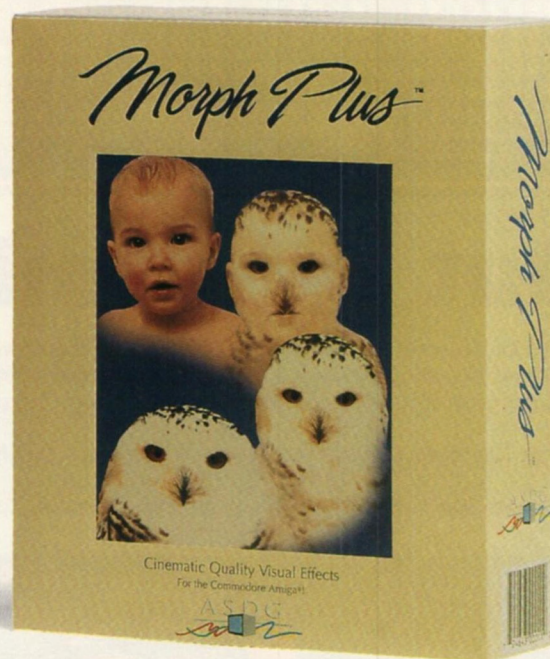
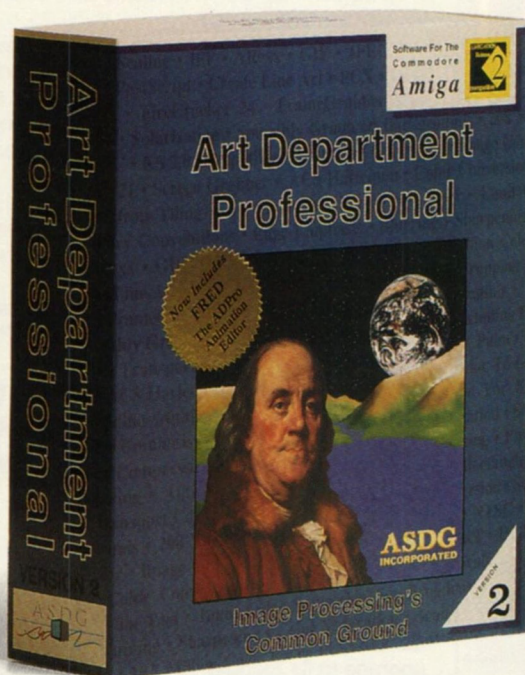
Blue Ribbon Soundworks has moved to new offices. They can now be located at 1605 Chantilly Drive, Suite 200, Atlanta GA 30324 USA. Tel: 404 315 0212.

They have also released news of their latest product – the One-Stop Music Shop. This is a 16-bit soundcard for the Amiga featuring the E-Mu Proteus SoundEngine. The retail price is \$649.00. (£420)

Blue Ribbon have also asked us to point out that the update for the PatchMeister is actually version 1.0C. The original version is 1.0 which may be confusing to some users.



# Bring Home The Best



If you're thinking about getting an Amiga® special effects or image processing product, here are some facts to consider:

- ASDG's Art Department Professional was named the "Best Image Processing Program" for 1992 by the readers of Amazing Computing Magazine and "Best Video Software" by Germany's Amiga Plus Magazine.
- American Software And Hardware Distributors and MicroPace Distributors (the two largest Amiga® software distributors in North America) cite ADPro and MorphPlus as the best selling products of their kind.
- ADPro placed third among ALL Amiga® software products on the MicroPace 1992 Top 50 Sellers List.
- The Post Group, one of the largest post production houses in the world, has used ADPro and MorphPlus in the production of special effects for the prime time TV



show Quantum Leap and for major motion pictures.

- Mark Swain, an AmigaWorld reviewer (and animator for Foundation Imaging, the creators of the special effects for Babylon 5), said, "MorphPlus produces the most realistic shape shifting special effects I have ever seen on a desktop."
- David Duberman, Executive Editor of Video Toaster User, said in a comparative review of Amiga®

morphing products, "MorphPlus is the Rolls Royce of Amiga® morphing software... it will pay for itself with one job."

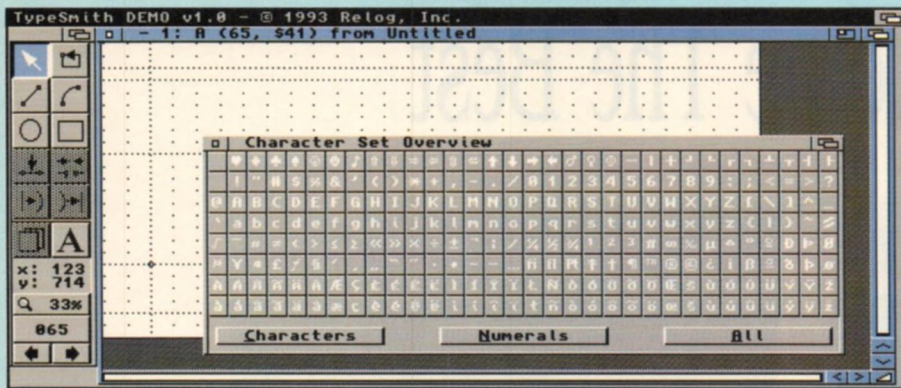
Consider the facts.  
Then bring home the best.



925 Stewart Street Madison, WI 53713  
608/273-6585

Art Department Professional is a registered trademark of ASDG Incorporated. MorphPlus is a trademark of ASDG Incorporated.  
Amiga is a registered trademark of Commodore-Amiga Inc.





TypeSmith for the Amiga, now you can try it out

## Try Out TypeSmith

TypeSmith, the font editor for the Amiga, is now available as a demonstration version. This disk is available for £3.00 inc. p+p and enables users to try out the program before they buy the full version. The demonstration version is complete except for the the save, save as and export features.

Available from George Thompson Services, publishers of PD news – the official Soft-Logic UK user group.

**Contact:** Bridgegate Centre, Martinfield, Welwyn Garden City, Herts. AL7 1JG.  
Tel: 0707 391 389.



High quality diskettes from Dyan

## Colourform Diskettes

The Dyan range of Colorform diskettes are now tested virus free during manufacture. Dyan 100 Colorform are full surface tested, the DOS version is pre-formatted at the factory are tested on and off tracks. Off track testing ensures there are no faults which can 'grow' into the tracks and destroy the data without warning. As a result all Colourform diskettes are guaranteed 100 per cent

error free. The addition of a virus test is an assurance that at no stage in the production process have the diskettes been exposed to a virus.

Also the diskettes have a high 'clip' level of signal response which is said to ensure PCs will be able to read data even if the read/write head is out of alignment. Tolerance levels drop markedly with weak clip levels so that even

slightly misaligned heads will not adequately read some diskettes.

Colourform is available in see-through plastic storage boxes of 10 diskettes, with two each of yellow, red, green and blue to enable better identification and colour coding control.

**Contact:** Dyan Magnetics  
448A Basingstoke Road,  
Reading, Berkshire RG2  
0SE. Tel: 0734 868010.

# CITIZEN Adds To Swift

Citizen has launched the Swift 90C, a 9 pin colour dot matrix printer that, they tell us, offers low cost, high quality printed output at a RRI of £219.00 + VAT.

The Swift 90 is also available as an optional colour version for £199 + VAT.

The Swift 90C operates at extremely low noise levels and by using Citizen's Command Vue III control panel, makes all of the printer's functions easy to use according to Citizen. The paper handling enables printing on multi-part stationery, cut sheet or continuous paper and overhead transparencies.

The targeted market for the Swift 90C is small businesses, educational users and the home computers users. It is useful for newsletters, colour graphics and class projects.

**Contact:** Citizen Europe Ltd., Citizen House,  
11 Waterside Drive, Langley Business Park, Langley,  
Berks SL3 6EZ. Tel: 0753 584111.

## V 2.1 ALADDIN 4D

Adspec Programming has announced the latest upgrade to its Aladdin 4D – version 2.1, which is free to all registered users (who should have received it by now). Anyone not in receipt should send in their registration card or contact Adspec direct. All new packages are now being sent out with v. 2.1 – anyone purchasing a package with version 2.0 will automatically receive v. 2.1 when they send in the registration card.

In addition to 'correcting some bugs' (their words not AUI's) the new version includes extra features such

as Art Expression Support (Aladdin 4D will now read in the encapsulated PostScript files from Soft Logic's Art Expression program) as well as more group levels, additional line types and faster rendering.

Requires 2 MB of RAM, is AmigaDOS 1.3/2.0 compatible and has regular and maths coprocessor version included. (See the review in this issue of AUI).  
**Price \$499.00 (about £300).**

**Contact:** Adspec  
Programming, 467 Arch  
Street, P.O. Box 13, Salem  
Ohio 44460.  
Tel: 216 337 1329.

## Amiga Rom Switch

To take advantage of the new Workbench 2.1 upgrade kits from Commodore without losing 1.3 compatibility, you can now fit a Trilogic keyboard operated ROM switch.

Designed and manufactured in the UK by Trilogic, it enables any two workbench ROMs to be fitted to any Amiga except the 1200 and selected without recourse to external switches. Installation does not require any soldering or any chip other than the ROM to be removed. Full instructions are included but Trilogic will fit it for £15.00.

Prices: The Workbench 2.1 upgrade kit for the A500 and 600 2.1 kit complete inc. ROM, 2.1 Disks and manuals £79.99 Workbench 2.1 disks & manuals only £49.99.

Special price for 2.1 kit inc. ROM and ROM sharer £99.99 (save £8.00).

Trilogic can also supply Workbench 1.3 £29.99 or 2.0 £39.99. For address see page 11.



# FEELING INSPIRED?

This selection of Amiga software titles can help you paint, morph, animate, render, trace, model, present, design... create whatever your imagination holds.

## Personal Paint RRP £59.99

Achieve sophisticated image processing with Personal Paint.



- ❑ full Advanced Graphics Architecture support
- ❑ programmable effects like emboss, sharpen, blur
- ❑ up to nine brushes
- ❑ colour font support
- ❑ text editor
- ❑ Amiga Clipboard for text and images

## ImageMaster RRP £159.99

For excellent 24bit image manipulation.

- ❑ hundreds of tools including: gamma correction, colourise, rotation, morph, mirror, zigzag, special FX
- ❑ more than fifty image compositing tools including: merge, rubthru, punch, scale, clip, anti-alias
- ❑ complete set of 24bit painting tools



## Art Department Professional v2.1.5 RRP £179.99

Speed, power and flexibility in one image processing package.

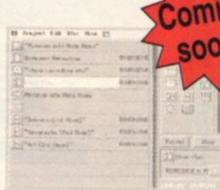
- ❑ 24bit colour or 8bit greyscale processing
- ❑ read and write file formats including IFF, JPEG, PCX, BMP, etc.
- ❑ control a range of peripherals including graphics cards, postscript printers, etc.
- ❑ modular processing functions include apply map, blur, colourise, flip and more
- ❑ powerful colour correction and separation facilities
- ❑ ARexx interface



## MediaLink 3.0 RRP £399.99

Create, combine and synchronize graphics, text and animations with audio and video.

- ❑ real-time loading of larger-than-RAM animations from hard disk
- ❑ supports three time code systems: internal, MIDI and SMPTE/EBU
- ❑ anti-aliased fonts
- ❑ ultra smooth line and page transitions
- ❑ intuitive user interface, multitasking
- ❑ XaPP (external applications) support: link up video disc players, VCRs, CDTV, etc.



Coming soon!

## Adorage RRP £79.99

The English version of Germany's best-selling digital video effects generating software for the Amiga!

- ❑ Super Smooth Animation (SSA) format
- ❑ more than 700 combinations of effects
- ❑ fast execution of effects on either brushes or screens
- ❑ on-line help



## From the publishers of Adorage -- introducing clariSSA

clariSSA enables Amiga animators to create, join and play back smooth, colour-accurate anim5 or SSA animations in broadcast quality. Extremely fast and easy to use.

# CLARISSA

Distributed exclusively by Micro-PACE.

Coming soon!

## X-CAD 2000 RRP £151.58 X-CAD 3000 RRP £386.58

Powerful computer-aided design with X-CAD.

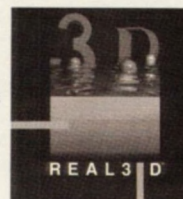
- ❑ super fast zoom and redraw commands
- ❑ 2500 possible command combinations
- ❑ 2D and 3D modelling
- ❑ accurate to 1 millionth of a millimetre
- ❑ up to 32 user definable viewports



## Real 3D Professional Turbo RRP £99.99

Professional 3D modelling, ray-tracing and animation tool.

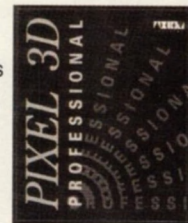
- ❑ sophisticated solid modelling and 24-bit rendering
- ❑ lighting and fog effects
- ❑ superior materials handling and mapping methods
- ❑ 2D animations on 3D surfaces
- ❑ freeform tools and powerful animation functions



## Pixel 3D Professional RRP £144.99

The most powerful 3D object utility program available!

- ❑ loads and saves 14 different 3D file formats
- ❑ convert bitmaps of logos and pictures and structured fonts to 3D objects
- ❑ single point editing facilities
- ❑ smooth, bevel and extrude converted bitmaps with precise control
- ❑ object optimisation tools including polygon reduction
- ❑ spin objects on any axis with offsets and definable zoom



Contact your local dealer or ring Micro-PACE on (+44) 0753 551 888 for the dealer nearest you.

**Micro-PACE UK, Ltd.**  
D I S T R I B U T O R S

Unit 10, Perth Trading Estate, Perth Avenue, Slough, Berkshire, SL1 4XX, UK. Registered in England and Wales. Registration number FC16591. All prices are recommended retail prices including VAT. M9303



## Help For Portables

The Health and Safety Executive (HSE) has published an information sheet to help employers decide how to maintain portable electrical equipment. It is aimed at helping small businesses, often working from office environments, who may be unsure about their legal responsibilities.

The information sheet discusses effective maintenance, and concentrates on the simple checks which employers can take to ensure equipment is safe. It lists visual signs which might indicate that equipment may not be in a sound condition: eg. the plug is damaged, for example the casting is cracked, the cable sheath was not secured to the plug; there is damage to the cable or to the case of the equipment; the appliance shows signs of overheating; water has been able to penetrate the equipment. These checks can be made by the user of the equipment or by a competent person appointed for the task. Any faults should be reported and the equipment taken out of use immediately.

**For information on the information sheet:**

**Contact: HSE Information Centre, Sheffield S3 7HQ.**

**Tel: 0742 892345.**

## 600 & 1200 HDs

Trilogic can supply 2.5" IDE hard drives which are ready formatted, have easy access times in sizes from 20 to 120 megabytes. They fit into the internal drive bay and have a low power consumption.

However opening the computer may invalidate Commodore's On-site warranty so for £42.99 extra, trilogic offer an extended warranty which will cover both the

computer and drive for 3 years with the added bonus of accidental damage as well as breakdowns.

Prices: 20 meg £119.99, 40 meg £169.99 (not suitable for the A600), 60 meg £19.99 or 120 meg £369.99. Prices include VAT and drive connecting cable.

Trilogic also have available the A600 with 60 meg drive and extended warranty - £499.99 inc. VAT, or the A1200 with 60

Commodore has launched a new sub-£1,000 Amiga for users who want a machine with greater power than the A1200, but don't need to go to the 040 based 4000 level.

The A4000-030 sells for £999 for an 80Mb model and features all the specifications of the further upmarket A4000-040 but with a more economical 68030 chip.

Commodore told **AUI** that the machine will play a key role in evolving the Amiga

range, its technical capabilities and pricepoint bridging the gap between the A1200 and 040-4000.

"There's never been a better time for professionals and enthusiasts to explore the formidable computing power of high-end Amigas. I'm confident the Amiga 4000-030 will build on the great success of the 040 machine," commented Commodore's, multimedia sales manager Mike Gosheron.

meg drive and extended warranty - £599.99 inc. VAT.

**Contact: Trilogic, Unit 1, 253 New Works Road, Low Moor, Bradford BD12 0QP.**

**Tel: 0274 691115.**

## HARD DRIVE PRICE DROP

A500 and A500+, the HD8+ is an externally fitting unit. Higher capacity models (from 80 to 213Mb) and an

upgrade to the GVP A530 are also available.

**Contact: Silica Systems 081 309 1111.**

Another price drop, this time from GVP.

GVP have announced a reduction in price of the HD8+ 42Mb hard drive from £349.00 to £299.00. The GVP HD8+ features 'designer' styling, GVP custom interface technology and a high speed SCSI mechanism for maximum data transfer speeds, expansion capability for RAM and other SCSI devices is available. The drive is supported by a 2 year warranty.

Compatible with the



## THE £999 AMIGA



## 254 Amigas!

A new version 2.6 of the MultiFaceCard-2 is now available from bsc (why don't they use capitals?). The most important change is the ParNet driver which is a network solution from PD based on the Amiga-own parallel port. Up to 254 Amigas can be connected/

networked through a special cable. The PitNet driver of the MFC-2 allows a parallel port of the MFC-2 to be integrated in the network. Up to 40 kByte/second can then be transferred with an A2000, compared to about 20 kByte/second on the Amiga port. If both computers are supplied with a 68030 accelerator (in addition to a MFC-2 each), up to 90 KByte/second is possible.

The new MFC-2 version 2.6 is now also fully compatible with the Mailbox software C-Net. The software is installed through an 'installer' script. An update is available under the art no UDMFC00005 via the bsc hotline. **Contact: 089 357 130-0.**



# CGU update

E M Computer graphic have signed a licensed distribution agreement with Gold Disk for rights for E.M.C. to distribute the Gold Disk program CGUpdate.

The CGUpdate program updates the CGFont directory for Professional Page users to enable them to use any new CGFonts that have been added to the CGFont list. As a result of this agreement, the entire range of the Computer Safari Commercial fonts are now available for distribution in GCFONT FORMAT.

These Safari CG fonts are compatible with Professional Page, PagesetterII, Wordworth, Scala, Workbench 2.04 and any Amiga application that supports the use of CG Scalable fonts. All UK Safari font disks come complete with all font files necessary for installation into all versions of Amiga Pagestream.

The disks also contain fully hinted Type 1 font files which can be used with either Pagestream 2.1 or above. Type 1 .PFM files are also included as an added bonus for Windows 3 applications including Adobe Type Manager.

**Contact:**  
**E M Computergraphic,**  
**8 Edith Road, Clacton on**  
**Sea, Essex CO15 1JU.**  
**Tel: 0255 431389.**

## Blitz BASIC 2

Acid Software, based in New Zealand, have announced the forthcoming UK release of Blitz BASIC 2. This is a heavyweight package (literally, since the manuals weigh in at over 4Kgs!) which offers support for intuition, inline assembler, structured programming, fast graphics, 3D, Dpaint anims, MED, Arexx, and much more. Phew! The package is already selling well in Europe and the US, but the programmers of Blitz BASIC 2 are well aware of the popularity of AMOS in the UK and so are waiting until AGA support has been implemented before releasing the package in this country. Expect a price of £69.95.



Cor! . . . This is better treatment than the NHS.

## Amiga hits the Wildlife World

Today there are many organisations set up in order to protect the welfare of animals such as the WWF and the RSPCA. Well another big contribution to the animal world is the Milton Keynes Wildlife Hospital, which was formed in the early 1980's aiming to care for sick, injured, orphaned and disabled wild birds and animals. They have hundreds of intakes each year of which most are birds. That's all very well, but what has this got to do with the Amiga?!, I hear you cry . . .

Well, a chap called Ian James who works at the hospital is making a video about animals to show to

children's schools in order to give them a more clearer understanding about animals and when to actually help them and when they should just be left alone. And to make the video he is using the trusty old Amiga! But as the Hospital is a charity and funds are scarce, acquiring some of the equipment is a bit difficult. So any of you budding Amiga fans out there who can lend a helping hand or need further information:

**Contact: Ian James - Milton Keynes Wildlife Hospital,**  
**150 Bradwell Common Boulevard, Milton Keynes,**  
**Bucks. Tel: (0296) 432386**

## EMPLANT

Blittersoft have told **AUI** of the long-rumoured Emplant is now available and that it supports A1500/200 with 68030/040 processors, A3000 and A4000 systems and even the A1200.

Emplant has full colour (16 colours on standard Amiga and 256 on AGA Amigas) and multitasking emulation of the MAC II as standard. Custom Video drivers are soon to be released for various 24-bit third party boards. Currently in stock are PAL and AGA drivers and the high density disk which will be a free update disk is due to be released soon.

We hope to review Emplant in the next issue of **AUI**.  
**Contact: Blittersoft, Denbigh House, Denbigh Road,**  
**Bletchley, Milton Keynes, Bucks. MK1 1YP.**  
**Tel: 0908 368071.**

## International Computer Show

Westminster has announced the date of the International Computer

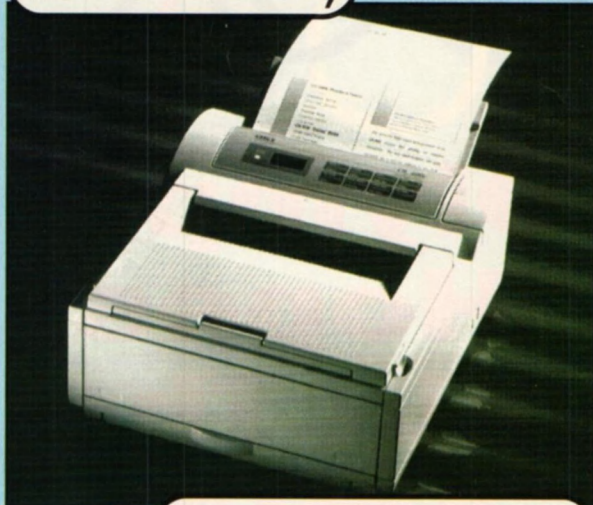
Show, to be held in Hall 1, Wembley Conference Centre, 19-21 November.

This, say Westminster, will enable exhibitors and consumers to plan ahead although already over 85% of exhibitors have booked stand space for November.

The next show will focus on the Amiga and increased support for the leisure market. There will also be a music feature and the education and home office features will be expanded.

**Contact:**  
**Westminster Exhibitions**  
**Ltd, Surrey House, 34**  
**Eden Street, Kingston,**  
**Surrey KT1 1ER.**  
**Tel: 081 549 3444.**

## MORE TEXT,



## LESS MEMORY

OKI's sophisticated new printer which is almost a computer!

OKI's new 4 ppm OL400e is a desktop printer featuring a fast RISC processor and enhanced memory management which incorporates data compression techniques so the users can print more text and graphics using less memory. However, should applications demand intensive memory resources, user installable memory upgrades exist in single units from the basic 0.5 MBytes to a maximum 4.5 MBytes.

With a footprint of only 320 x 360 x 160mm (only slightly larger than A4), the OL400e weighs a mere eight kilos and is small enough to fit on any desktop - making it useful for both home and office environments.

OKI have looked to increase the drum life to 20,000 pages, and the toner life to 2,000 pages. OKI have a toner recycling system and its ozone emission level is claimed to be virtually zero. In addition there is an advanced power saving mode.

**Contact: OKI on 0753 819819.**



## CBM Sponsors Paralympics

Commodore has announced that it is providing a £25,000 sponsorship for the British Sports Association for the Disabled (BSAD) to allow them to prepare for the 1996 Paralympics in Atlanta.

The BSAD will receive six top of the range Commodore PCs to store data on the athletes, record their performance, log events and improve general communications with BSAD regional offices.

Kieron Sumner,

CBM's National Sales Manager for its PC Division, told **AUI**, "Commodore is pleased to support the BSAD and its members in their quest for the best, a Gold in Atlanta."

Commodore is already a substantial sponsor on the sports scene with their logo appearing on the shirts of Chelsea's Premier Division football team and with other involvements in motor racing and local junior football events.



## Olympic Hopes Via The Amiga

The British Olympic Bid is using Amiga technology to sell Manchester to the rest of the world. (And some people would say they were welcome to it. . .)

Manchester 2000, the body which aims to bring the Games to the North West in 7 years time, has acquired an A4000 to convey the message of its £5 million campaign. The machine will run Scala MM200 presentation software.

Its first big test was on March 22 when the 16-strong Technical Enquiry Commission visited Manchester. This delegation was the first of a procession of Olympic visits before the final decision is made on September 23 in Monte Carlo. (Please Mr Editor may I go and report that event?)

Manchester 2000's own computer operators met with experts in healthcare, transport, security, architecture and other sectors to put their presentations on the machine. (Bet you the Games go to Peking though – jolly good job too. Do we really want that kind of non-stop loony super nationalistic hype in this country?)

## CITIZEN Dominate Colour Printing . . .

The latest figures from IDC show that Citizen is continuing to dominate the 'optional' colour dot matrix market in Western Europe with a growing market share of over 66%

Overall the UK is the largest market within Europe and Citizen holds 81.7% of this sector. In the German market, second in size after the UK, Citizen boasts 51.8%, in France 63.8%, Denmark 62.2%, Norway 32.7%, Finland 71.5%, Switzerland 32.6%, Austria 74.5% and Spain 65% (most of the

countries the editor has lived in).

Citizen told **AUI** that research shows that colour printing is no longer exclusively available to corporate companies with large IT budgets. Technological advances during the past 3-4 years have brought quality colour output to an affordable price level within reach of smaller businesses, educational institutions and home users/hobbyists.

We're glad to hear Citizen's sales are still ticking over!

## Address It!

If you're tired of trying to program your own database to handle names or are finding other programs too tedious or cumbersome to use, help may be on the way. A new program, Address It! is coming out from Legendary Technologies in Canada.

Legendary – great name that! – told **AUI** that the program "has been designed specifically to meet the needs of the average Amiga user who uses the computer for a little of everything." Which probably includes all of us .

Address It! can create files with up to 5000 records each; it will automatically sort by name, job, company, city or user-defined field. It has, say Legendary, a powerful search facility for unlimited record tagging and among other features it will print phone books, custom roster lists, labels, rotary

Easy addressing from a Legendary program

card files, envelopes and, of course, addresses and address books.

It also supports dot matrix, ink-jet or laser printers and will even dial phone numbers through a modem. And Legendary claim is very easy to use.

Cost? Around £25.00.

We hope to have a

review of this little marvel in the next issue of **AUI**.

**Contact: Legendary Technologies Inc., 25 Frontenac Avenue, Brantford, Ontario N3R 3B7.**

And if there are any dealers or distributors interested, Legendary told us they will be glad to hear from you.

## Quote of the Month

*"The standard PC architecture, and particularly the standard VGA card, represent a significant technological disadvantage compared not only to workstation class computers from the likes of Sun or Hewlett-Packard, and high-end Macintosh machines, but even in comparison with games orientated machines like Commodore's Amiga."*

David Morton – PC Week

Ah, at last someone from the big brother world of the PC is admitting it. In areas such as graphics the PCs simply cannot match the Amiga – technically. But they still get away with the "games orientated Amiga" put down. Ask the video studios if it's only for games!



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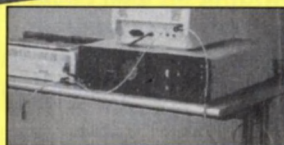
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# Lew

**In the USA, AUI's roving correspondent Mike Nelson sat down with Commodore's Vice President of Engineering, Lew Eggebrecht for an exclusive interview.**

**A** recent appointee, Lew is one of the key decision makers on Amiga technology, and even in his relatively short term of office has made waves in the most positive sense.

He has been involved in computing for over 24 years, going straight from college to work in the manufacturing/engineering division of a little company called IBM, designing custom control processors, including their first RISC chip. He then went to Atlanta, Georgia to work closely with the Vice President of the division on the "lower end" systems.

"All of my career has been spent in smaller systems rather than mainframes. We started a small test group to investigate very low cost products such as the IBM DisplayWriter and the first IBM machine

with a BASIC interpreter. The outcome of all this was, of course, the

IBM PC for which I was the design and project team leader. We did some further work on the architecture, some of which was implemented and some of which was not. I then went on to work on 3270 terminals for mainframes before leaving IBM to work for Franklin Computers who developed Apple compatible products. The big

problem here was that they were unable to licence the software from Apple so they went out of business."

Lew moved out of hardware design into a software consultancy that specialised in telecommunications programming, doing projects for the likes of AT&T, British Telecom etc.

"I left them to start my own communications company which I still own, although my Commodore commitments mean my family run it now."

***How did you get involved with Commodore?***

"Two years ago I started consulting with Commodore to help them develop their next generation PC compatible product line, so my initial work was not on Amiga at all. We're still one of the major suppliers in Europe of PCs but it's

not as profitable as Amiga though! Then, about a year ago, I began to work on the next

generation of the Amiga's chipset."

"I'd worked on Apple, RISC, IBM and all that's left is Amiga - I knew nothing about it and it's a real challenge. The architecture is really interesting and has great promise. It's poorly viewed in a lot of corporate applications and we're trying to change that and generate a lot of interest in Amiga. This is

one of the reasons why I'm going out and speaking to people, being more open with future strategies and directions to prove to people we are a viable vendor and we do know what we are doing. That's been a little lacking previously..."

We're trying to demonstrate credibility and an ability to produce new products. We have goals. I think the fact we have released two new systems and other products inside a year demonstrates that Engineering is not asleep and can produce high quality stuff at a high rate. That's the story I'm trying to tell."

## KEEP IT SMALL

**"In many ways the Amiga is just like those early days of the IBM PC when we were a small group of 12 people. It shouldn't surprise people that small groups do well - even in the early days of Microsoft, Bill Gates and one other guy did all the work."**



Lew Eggebrecht - CBM's Engineering Supremo - finds the Amiga a real challenge!

I've always wondered why IBM went for the Intel 8088 processor rather than the 68000 of the Amiga.

"At that time there was the choice and one of the things that attracted us to the chip was the pricing we were able to get. Also we felt it was much easier to get software running on the Intel architecture rather than on the Motorola - at that time there were no native compilers so everything had to be done on an IBM mainframe and there was no development environment for the 68000. Also Intel offered a package that would translate 8080 or Z80 code so that gave us the opportunity to move some applications over quickly. This meant that there was a body of software that worked at announcement and we couldn't do that with a 68000. It really had nothing to do with the technical attributes of the chips; it was more





final run of the chips and got everything right and the products came out. The engineers were happy to have a project to work on so that lack of direction really was overcome. We put more focus on doing things quicker and better. We have some very free thinking engineers in both hardware and software - very very creative, and if you don't give them specific goals they'll just continue to develop and develop. The process of converting a design to a product is something Commodore has always had difficulty with.

We're stopping all that. For instance we used to do 4 or 5 revisions of a chip but now it's 1 or 2 at the most. We like to get it right first time and we now have a lot of powerful in-

## The New AA+

"AA+ will be a more profitable version of AA with all the things we wished we'd got in but didn't have time. We have a list of all the problems we currently have at the low end. The serial port, we can't read high density floppies, there isn't enough bandwidth to do 72 Hz screens plus there are no chunky pixel modes for rendering. We listed all those and said "OK let's go out and fix them as quickly as we can", so AA+ is an extension, not radically new architecture. We're doing the best that we can, taking advantage of advances in technology, significantly reducing the cost and that's the goal."

time but it's only been serious for about a year. It was obvious that AAA was not going to meet our cost targets for the mid to low end systems. We wanted to continue that development and we also had to have an enhancement quickly so, AA was the solution to that

as we're using a method called split cycling to do two cycles at once. To get the video out faster we're bursting out four 32-bit words in one memory cycle so you can't upgrade a 1200. It's the same all over though - you can upgrade a 286 to a 386 if you change the

motherboard - that's progress. We'd love to ensure that no one was ever made obsolete but that's just not practical - you spend so much time being backwards compatible that it gets in the way of progress although compatibility is a major design target.

There is a limited amount of software available for the Amiga and you don't want to make that smaller. We want to ensure that if

The process of converting a

design to a product is something

Commodore has always had

difficulty with.

problem. It would have been nice to have AAA at the same time as AA but we just couldn't get there."

# Eggebrecht

## Engineering the Amiga's Future

a business decision. Most programmers would prefer the linear addressing of the 68000 which you now have with the Intels."

**What sort of state was the Amiga in when you took over?**

"Well just over a year ago, AA was sort of languishing. The design was done but there was a lot of bugs. We were too conservative in trying to put it into a product and flush things out so we decided we wanted a AA product by Christmas '92 and we achieved that. We put together a little task force, did a

house tools and simulations of chips to help us do that. We're also using a lot more industry-standard chips rather than unique things - if you leave engineers alone they'll re-invent the wheel every time and we can't afford to do that."

**The AAA has been worked on since 1989?**

"Yes, we worked on it from an architectural point of view for a long

**Where does the AA+ leave people who have bought A1200s now?**

"It's going to be 1994 before you see any AA+ product. I don't believe there'll be any easy way to upgrade because of the packaging of the chips - they are surface mounted. The memory timing and interfaces are dramatically different

It was obvious that AAA was not

going to meet our cost targets for

the mid to low end systems.

the developer does something legal, it will work on the next generation of the hardware. You may not be able to take advantages of new features, but you aren't obsolete. Unfortunately software is sometimes written to be timing critical or uses a feature that we didn't know existed and got designed out, so that leads to problems. We spend a lot of time and money on compatibility testing."

**Games programmers tend to be quite cavalier in their work, working to a shelf life of their**



## Engineering the Amiga's Future

**product of only 6-8 weeks. What can be done to help them?**

"We do a lot of testing, but programmers don't use operating system calls correctly, write directly to the hardware and have timing-sensitive code - changing the speed of the processor will make many games break. AAA has a lot of compatibility built in but we aren't 100% successful. We give out Beta systems early so if we can accommodate people we do. There's some pretty wacky programming going on out there!"

**Where do you see the Amiga in a few years time?**

"Clearly we will continue with the living-room type of box. We learned a lot of things from CDTV - where our best price point is, how important the quality of the software is and the fact that running Amiga software is important. Most of our sales come from applications where it is sold as a computer not a CDTV. We understand that we need Full Motion Video capability on the system and we are working towards all those goals. Getting AA out was important and now we have time to look at upgrading CDTV and also looking at other price points. We can't do everything at once so we have to do what gives us the best return on our investments. Consistent high quality products are the most important right now but we

will look at expanding the product line both above and below the current machines. Commodore makes a lot of its revenue from low end products so we pay particular attention to that area."

**It's rather ironic that you created the PC and along with Microsoft MS-DOS and Windows, all the bias against the Amiga. How can you overcome this so the Amiga is accepted as a viable machine for professional use?**

"We can get to the point where the processor is not so important and the user can pick whether he wants to use AmigaDOS or NT, or PC graphics versus Amiga graphics at will. Once you get a person used to using an Amiga he loves it. That's always been the problem. Attracting developers to write software is another goal and that's hard because of the financial side of things. We do sell Bridgeboards - a 486 board is available today for the A4000, although we won't be doing one ourselves we'll be encouraging our third party developers to market them. We foresee very low cost solutions in the A1200 right the way up to Pentium products for the A4000, but again with the resources I have I'd rather encourage third parties to do these things. It's sort of off the shelf technology which we don't get much out of, so we may do joint ventures with people. In fact, one of the first things I did when I

## The Longer Term

"We want to see a complete family of products from the consumer level up to professional workstations. We have limited resources so we need to focus on certain areas. We hope that Amigas will become a standard in multi-media so it is important that in the future we run Windows NT and UNIX. I suspect that in five years time the Amiga will be RISC based. We aim to be the leaders in graphics, at least from a cost/performance standpoint although you never know, some of the things we are doing will allow us to bring the Silicon Graphics capabilities down to the desktop, and that's our plan."

started at Commodore was move people from the PC division to Amiga, and we procure most of our DOS machines from Taiwanese vendors like other people (including IBM). I'd much rather use those engineers on Amiga projects than on PCs."

**How many people do actually work on Amiga?**

"Our total workforce on Amiga including CATS is about 175 people - as many as there have ever been."

**What has impressed you most about third party products for the Amiga?**

"Well from a technical point the NewTek stuff is very exciting. All the video stuff is impressive and feeds on the strengths of the Amiga. We are seeing the Amiga finding its way into very large vertical markets like information kiosks, video presentations that are OS-independent. You really don't have to be PC-compatible for that. Performance, price and a good development environment is what counts and this is quite a large market."

**Many people see the Amiga in much the same position with regard to video as the Mac was with DTP. Do you go along with this?**

"Very much so. We have continued to preserve the NTSC/PAL capability as it is key to the system's popularity. There is no doubt about why the Amiga is unique and that is its interfacing with video."

**What do developers need to do to break into these "vertical markets" and convince people the Amiga is the machine to use?**

"In vertical applications, the system is hidden from the user - he does not make that decision for it made by the developers and when that is the case, we win because he understands the technology and its capabilities. It's much easier for the Amiga to go into this situation as there isn't someone in the board room saying "Why isn't this thing Apple or PC compatible?". He doesn't even realise there's a computer involved. You are selling an idea or concept rather than hardware - it works very effectively."

**Are Amiga developers prepared for this?**

"We know of a number of Amiga developers who are going after vertical opportunities. I think we're setting an example with our system software in terms of stability and compatibility, then performance. The new releases are much more stable. It's also much easier to

migrate. That quality costs and while you can have brilliant people doing brilliant things, there's two sides to the product - the fun side and the hard work of making it stable."

**Will Amiga software go up in price to be on a par with PC products?**

"Not necessarily. One of Microsoft's pricing strategies is to use upgrades where once you buy into a product say for \$600 and register it, to get to the next generation is only \$100, and this has forced the overall pricing down. Access is the new Windows database introduced at \$99. There is a strategy in the PC world to advertise at one price and sell at another! I think the Amiga will move in that direction."

**What about the games market? It seems that the US games companies are moving away from the Amiga.**

"The 1200 has changed things to a certain extent. We've had a number of companies enquiring about the Amiga but it is a problem we recognise. We have provided a low cost, high performance platform which should attract those companies back. Most our sales are in the games area, particularly in the UK. In fact, the UK has always been a bright spot for Commodore. Kelly Sumner has done a great job and the response to the 1200 has been amazing. We are building them under contract in Scotland and shipping them directly to the UK office - we can't make them fast enough."

**Most of the games writers want to have 8 channels of sound. Is this going to happen at the low end?**

"The current capability is four channels of 8-bit samples at 27 KHz and we foresee that most systems in the future will have CD capability. Most of the sound and music will come from this so it was not as important to put that technology in. Our long term strategy is to put the DSP in every system, obviously. That will be sound in and sound out and you can do pretty much whatever you like."

**Does that mean that a AA+ machine will have a DSP?**

"We can't make that decision right now - it's something we'll have to look at but in that time frame, even in the low end, every machine is likely to have a DSP (Digital Signal Processor ED). It's a cost thing - although the AT&T chip itself is only \$20 to \$30 or so. AT&T has a number of lower cost options, as

## Taking a RISC

RISC - Reduced Instruction Set chips - are generally thought to offer a big advantage over conventional chips. This is what Commodore's engineering chief thinks about them and the Amiga:

"We are going down that avenue because that's the way the world is going. Even the Pentium is basically a RISC processor with a 386 core built into it. Eventually compilers will support superscalar design, executing two instructions with one clock cycle. Motorola architecture was actually much closer to a RISC architecture originally, given what we see from Motorola, the 68060 is realistically another year away and they are placing more emphasis on their PowerPC line, and

rightly so. Therefore we have to understand what is going on out there and how to design a RISC system. RISC buys you the ability to port other operating systems like NT and UNIX and hence

access to productivity software and a more professional environment. We

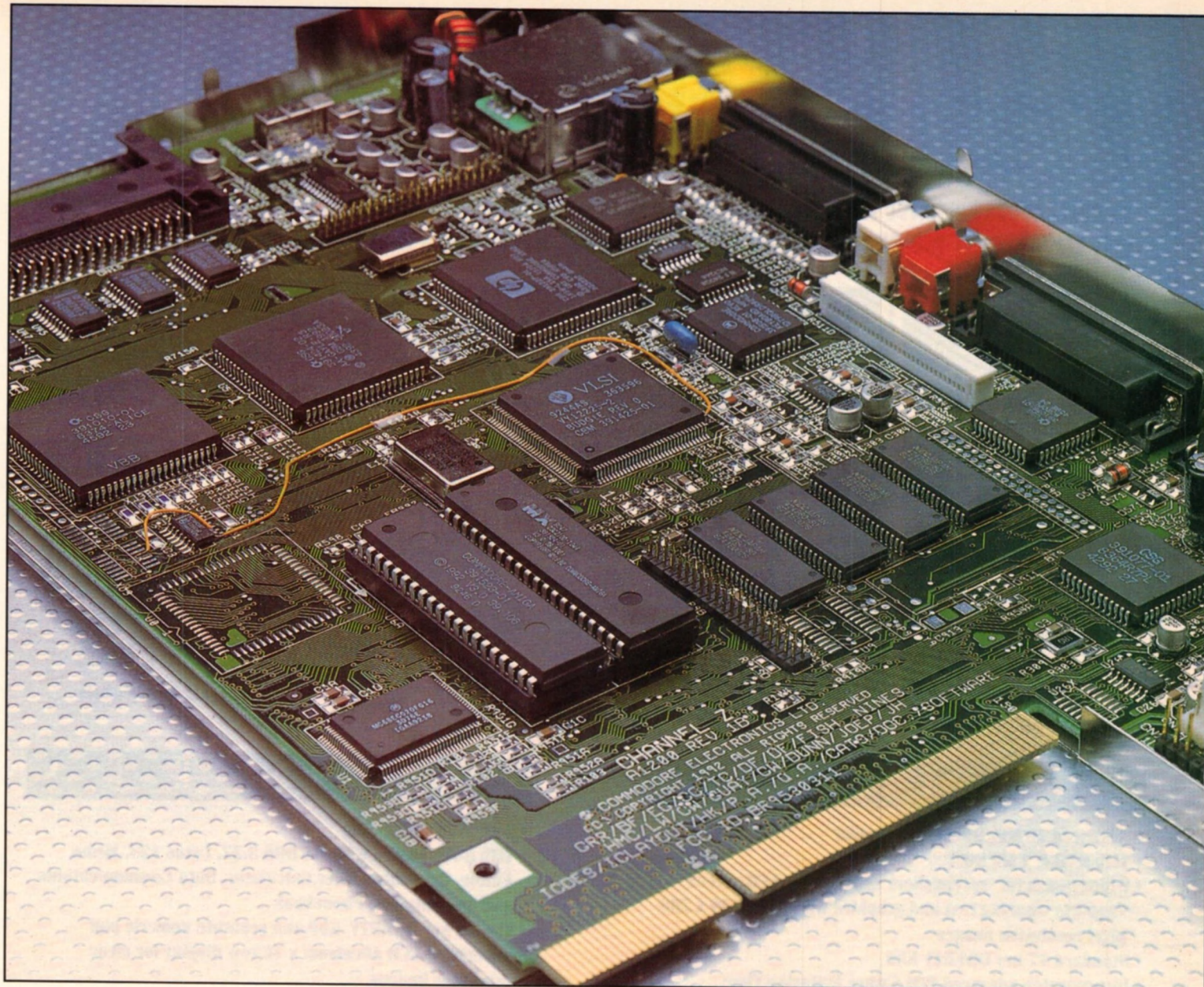
can make Amiga video technology work with a RISC processor. It will be an

Amiga though - you may be able to switch

between an 040 and RISC processor, or emulate 68000

code. It's an extension of the Bridgeboard concept with two machines running at once."





The AA chip set will feature strongly in the Amiga's future.

well, that are designed more specifically to go on the motherboard. The problem with the present DSP design is that it has one serial channel and everything you attach to it has to be run through at that channel rate. I think they're looking at having four independent channels running at different clock rates, and with that kind of enhancement, DSP makes a lot of sense."

**Do you see Motorola stopping at the 68060?**

"I don't know, but it's hard to see them justifying three processor projects, including the 88110, PowerPC. The 68000's will still continue to sell - in fact we are thinking of integrating the processor with the Amiga chips for the next generation machine. This gives a significant cost advantage and it could be faster, depending on the memory attached."

**What's it like at Commodore?**

"We're having fun at the moment - the engineers are enjoying things and we have a lot of internal discussions about what the Amiga should be."

**Where is the main competition now?**

"We do get squeezed with clone

PCs at the top and Sega underneath, and also boxes like 3D0, although I'm not as concerned about this because of its price point. We are in that gap and below us there is no one with a stable operating system. We always have the option of cutting down but it's difficult for them to move up. PC clones are a valid concern as they're improving in capability although they're light years behind in understanding multi-media. There is a large enough gap and we're going to charge out ourselves."

**What about the gap between the A1200 and A4000?**

"We've addressed that with the A4000/030 which uses the 68EC030 chip and is much cheaper. There's no MMU but AmigaDOS doesn't need it. I can't tell you the price as I don't set them. (Now announced as around £1000 in the UK. ED) The 040 is very expensive (hundreds of dollars), like the 486DX2 chip, it's a large proportion of the total cost. There's a lot of confusion about clock speeds and rating megahertz. It all depends on the memory outside the chip as well as the internal speed and system clock, so look at the benchmarks if you want to compare speeds."

**Why does the 1200 only have a 14 MHz processor?**

"It's to do with the AA chips' architecture and chip memory. You don't get much more access to the computer's RAM by increasing the clockspeed as the chips have priority. In FAST RAM this is different, but the A1200 has 2 Mb of chip RAM. Adding a higher performance processor doesn't buy you a lot on the base machine - it just goes faster to wait more! Accelerator boards with their own RAM can go at any speed. Of course, there is the old cost question - higher rate means more cost and we're talking dollars not cents."

**Has to A2000 gone out of production?**

"Almost. Pretty much the only avenue for this is the Toaster but Newtek is going to convert to the A4000, and they're really excited about the 030 version. Some vertical applications need the expansion slots but I don't know what its life will be. Our intent is naturally for everyone to move onto the 4000. The 4000T is close, probably in the summer sometime and yes, it's going to be more expensive because of the larger cabinet, power supply and more slots. Adding SCSI to the

motherboard isn't so pricey, though."

**How about that IDE drive in the A4000?**

"Yeah, that. We always intended the AA chipset to span a family of machines and SCSI is not such a good idea at the low end. IDE is significantly cheaper than SCSI and the low end machines don't have the performance requirements. Unfortunately we introduced the high end first and really you do need the SCSI. Eventually we'll get it on the board."

**Any message for the UK?**

"Just keep buying those 1200s. We're really pleased with the response and the UK will continue to be a bright spot for us."

*Commodore has a great asset in Lew Eggebrecht, and even the Padre himself, Jay Miner, seems to approve of the new approach. Clearly the Amiga platform is going to diversify even further into the professional and consumer markets, and both Commodore and its developers must prepare for the awesome things to come.*

*And if Lew is prepared to talk about all the AAA and AA+, RISC and such like, what is he keeping up his sleeve? a*

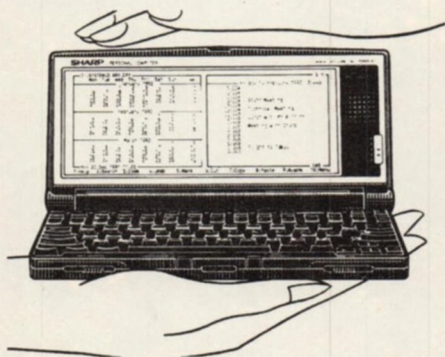


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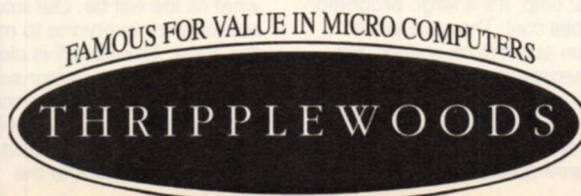
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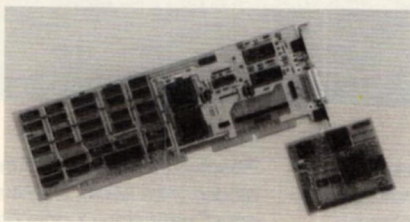
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## ALADDIN



**Bary McCarthy**  
**reviews a**  
**graphics**  
**program that**  
**conceals its**  
**magic a little**  
**too well.**

**YEP.**

Yet another 3D program for the Amiga market. And another trendy name. "Rub the lamp... Own the genie!" But let's be honest chaps (Adspec Programming), it's not really a new program at all is it? First we had Draw 4D, then Draw 4D-Pro and now... Aladdin 4D, or to put it another way, Draw 4D-Pro 2.0. Yeah, doesn't sound quite so groovy does it? I just want to make this all clear to the readers, because I wouldn't like to think that they were being duped in any way. I'm sure that wasn't the intention.

## what is it?

3D modelling, rendering and animation.

Works with polygons and points a bit like Imagine does but Aladdin has no limit to the number of sides that a polygon is made up from. Imagine uses triangles only, for its polygons.

## features

The following is a list of the main attractions. The ★'s are against things which I think are unique to Aladdin.

Lots of modelling tools like; extrude, sweep, size, clone, magnetism, slant, mirror. Most of the

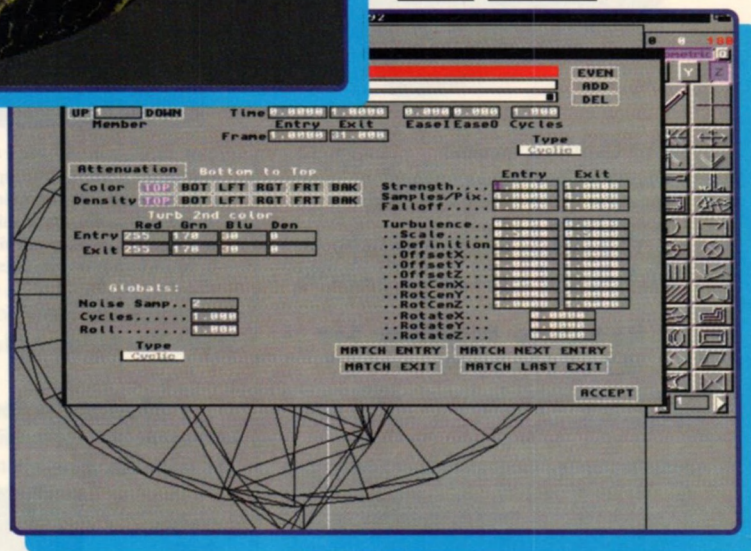
standard tools that any self-respecting 3D program just has to have these days. Mind you, most of them are fairly customisable.

Path Animation; linked paths and rotation paths. Path control is very flexible and the linking of paths is a powerful option.

Shading in Phong AND Gourand. Well, aren't we lucky? Both smooth the angular edges of objects in rendering, if required.

Time Line control; like Imagine, control of attributes like colour and texture over time. This allows for 'morphing' of these attributes. Just like in Imagine's Action Editor but it's not quite so flexible or as integrated. (Imagine 3.0 will now use the time line interactively with other editors and the whole system is TIME based instead of frame based.)

- ★ Wave Sources; create and animate waves on surfaces. This is a bit more interesting.
- ★ Shadows; ONLY the shadows are actually ray-traced. The rest of the scenes are Solid Modelled. This makes for very fast rendering.
- ★ Gas Objects; these can have turbulence added and can also be animated. They can also look extremely impressive!
- ★ Parallel Spaces (Layers); you



can have objects in different spaces, to allow easier editing of complex scenes and objects. Also, lots of cameras and targets can be in different spaces (!). LightWave (On the Toaster), Modeller 3D and most CAD systems use this approach to modelling. It makes for much faster editing and much easier editing of highly complex and very symmetrical (Such as buildings and engineering equipment) objects and scenes. I really wish that more programs would have this as an option.

- ★ Load EPS (Encapsulated PostScript) files; think about it... all those lovely postscript fonts!
- ★ Save ProDraw Clips; speaks for itself I guess.
- ★ Direct Support for; DCTV,

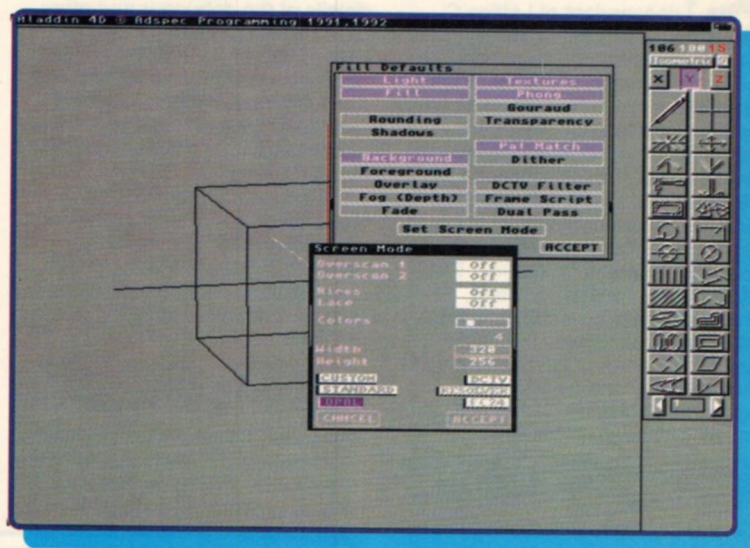
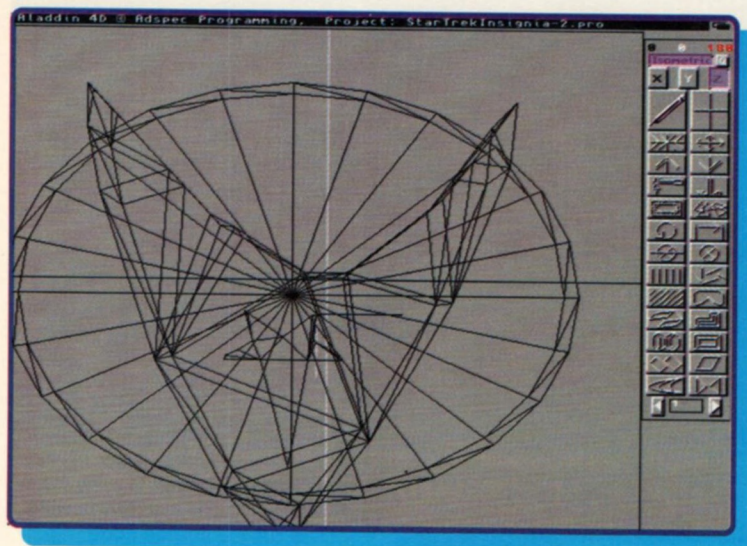
Resolver, Firecracker, Amiga Modes (Not AGA), IFF24 and now OpalVision (YippieYiYey! Because I've got one and it's fab) It's a pity about the lack of AGA support and what about JPEG?

## in use

Load up the software and let's take a look at the main screen and interface. This is a VERY IMPORTANT MOMENT (Software companies beware). If the interface doesn't let you in after about an hour or so, the vast majority of people will give up and bury it under a big pile of dust. And oh dear, there's a thin layer of dust already forming on my Aladdin 4D box. I'm sorry but this is not a very intuitive



# DIN 4.0



interface. You are presented with a window onto your 3D world, populated by a spinning axis. The right hand side of the screen is a tool box of very obscure looking icons. What is the point of icons which no one can recognise from their little pictures?!

The objects can be interactively edited via the mouse, in conjunction with the icons and menus. After a while, this becomes more fluid but it does take a lot of practice and accuracy is very difficult.

The manual starts with a 'quick start' tutorial that goes on a bit. It then proceeds with about the next third of the manual as a set of lengthy tutorials. This is actually the best way to learn how to use it, so I'm happy about that. BUT, please change the indexing system so that people can actually use it! What's the point in changing the idea of page numbering for a completely different system? I mean, we have been using page numbers for quite a long time now and I think most people would find them a lot easier to access. Try working out where EPAT MAK 2 is?! No thank you.

As a last note here, the menus are in horrid colours and non-WB 2.xx looking. Also, they don't seem to be standardised (Like WB 2.xx is). This is not a small point if you use a program day in and day out. It needs to look pleasant and be customised for your own specific uses.

## rendering

The rendering is set up for your own desires using another menu screen. The rendering itself is pretty fast, as you would hope, considering that only the shadows are fully ray-traced. The quality of the final images is also very good indeed. Take a look at the illustrations. In fact, the pictures that Aladdin creates are its saving grace in a way. It leads one to suspect that there is a very powerful and useful tool under the somewhat off-putting interface.

"Rub the lamp...  
(six weeks later)  
... own the genie!"

Right. I wish that 3D really was that easy but it isn't. No matter how wonderful an interface is, a new 3D program will take a LONG time and a LOT of patience to master. The question is, will it be worth it?

If the new program does things that no other will do. If it does all the same things but in a better/quicker way. If it renders at incredible speeds. If it does any of these, then it is probably worth delving into (or rubbing, in this case).

So is it?

Hmmmmmm. It's difficult to say and I'm not ducking the issue here. It's just that Aladdin works in a very different way to programs that I'm used to. I guess

you could say that it doesn't give me an excited "I want to find out more" feeling. This is a problem unless you're new to 3D. In that case I

probably wouldn't recommend it to you because it's far too complex to start with and has a steep learning curve (Newcomers buy Real3D). For the experts out there, I just don't find it a pleasure to use. This is why:

**No matter how wonderful  
an interface is, a new 3D  
program will take a LONG  
time to master.**

Horrible interface that is immediately off-putting.

'Alien' icons that look like they should be on the Predator's arm

(You'll know what I mean if you've seen the film).

Un-intuitive layout and control.

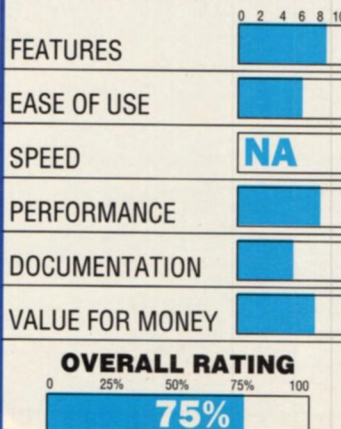
Weird and Wordy manual with the most obscure indexing

system I've ever seen!

BUT, it has some very powerful effects and tools and it is nice and fast in modelling and rendering. I think perhaps I'd like to give it bit more time but

I'm not sure if I want to. **a**

## Ratings: Out of 10



## INFO

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# Paul Overaa puts the new SAS C Development System Version 6.0 through its paces.

**S**AS C is, as established C coders will know, a descendant of Lattice C. Lattice's commitment to their C compiler and its associated software resulted in a product which acquired a reputation for quality that was second to none. In recent years, as development passed into the hands of the SAS Institute, it became obvious that the compiler and its environment was not only in good hands but that SAS were equally committed to quality. The SAS C Development System, as the package is now called, is one of the most professional and well supported products available on the Amiga today and a major new upgrade, known as Version 6.0, has in fact just been released.

## documentation

One of the main attractions of the SAS C package has always been its excellent documentation. With version 6.0 there have been quite a few organisational changes but, as you might expect, the material is as comprehensive, and as good, as ever with SAS now providing around twelve hundred pages of tutorial and reference material.

Although the manuals are physically contained in two A5 binders conceptually there are three volumes of documentation: The first provides installation notes, an overview of the SAS C environment, notes about the on-line help system, and detailed accounts of the use of the editor, compiler and linker along with details of the SAS ANSI C implementation, answers to common asked SAS C environmental questions and notes for programmers converting from

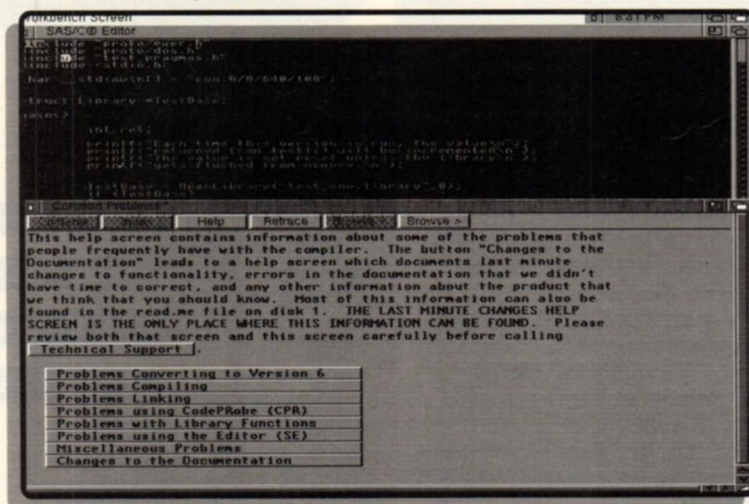
Aztec to SAS C.

The second volume gives details of the debugger and other utilities (including the SAS assembler) and the third volume deals with various aspects of SAS and Commodore supplied library use along with function-by-function accounts of the extensive SAS C libraries.

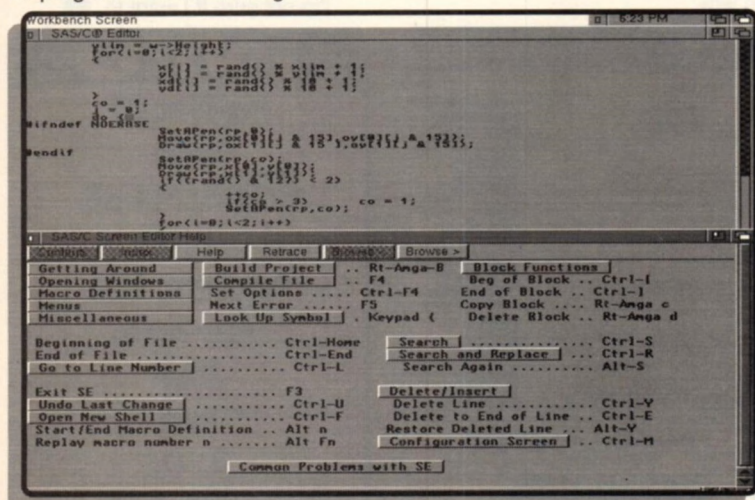
A small (45 page) Quick Reference Guide is also provided which gives summaries of the compiler, linker and debugger options along with prototypes and brief descriptions of the library functions.

## components

The editor, now called se, is a fully fledged, text editor which allows you to work with up to nine files at a time. You can cut&paste data

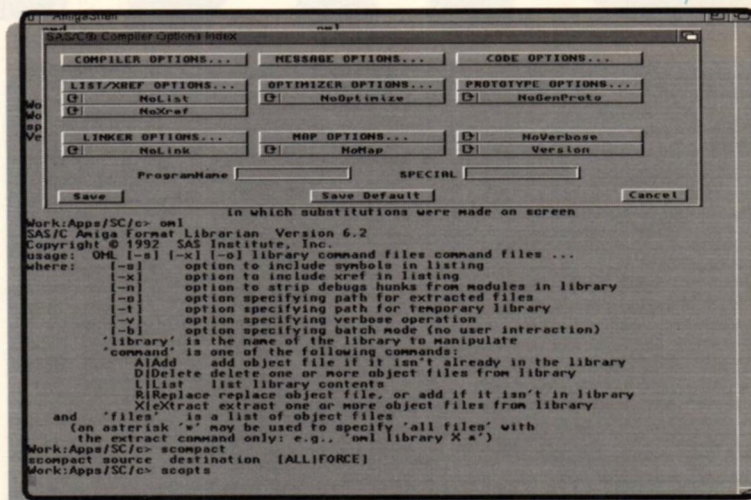


On-line help is a big plus for the new package.



The new editor in action.

# SAS.C



Setting up the compiler and not a CLI window in sight!

given a nicely 'Amiga-tized' front-end which is particularly easy for newcomers to come to terms with.

The SAS C source-code Debugger program is called CodeProbe and, as existing users will already know, it is brilliant. CodeProbe can not only be used for debugging your own programs but for analysing the code produced by the compiler and generally looking around the system. Some major improvements have been made to the CodeProbe debugger in this latest release. Additional ARexx support has been added and jobs like debugging resident libraries have been made significantly easier.

The debugger now also provides cross-debugging facilities - this means that it is now possible to have your programs running on one Amiga system whilst you debug them using another Amiga (the cross debugger works using either the serial port or, when debugging via a network system, a named pipe). OK, so most users are not going to have a spare Amiga lying around but it is nice to know that the cross-debugging facility is there if you need it.

Only the Commodore 2.0 header files are provided. WorkBench 1.3 based coders can, of course, use these as long as they remember to restrict their library function use to those functions available with the 1.3 version of the operating system.

If, incidentally, you are new to the world of C and have assumed that 'buying a compiler package' essentially means just that, ie buying a compiler with perhaps an editor, a linker, some libraries, and a few header files thrown in, then you are very much mistaken. All good commercial offerings provide substantially more software than

between windows and can use both ordinary function key and ARexx based function key macros. Se is user-configurable, fully ARexx controllable and, best of all, it allows the compiler to be called directly from the editor (which makes life that much easier for the programmer).

The compiling and linking stages offer a great many options (hundreds) and although these can be controlled by CLI/Shell commands the compilation process can nowadays also be carried out via a WorkBench oriented front end.

SAS have rationalised their compiler switch arrangements in order to support options files that can control the compiling and linking operations. These files, also set up via Workbench runnable utilities, allow programs to be compiled/linked according to project-specific compiler settings. The end result is that SAS C is



# 6.0

language files, object files and libraries. Sc does however take options in a different form and to help users make the transition from version 5 to version 6 two extra utilities have been provided. One, called sc5, accepts options in the form accepted by the lc command but invokes the new version 6 compiler. The other, called lctosc accepts options in the form accepted by lc and prints the equivalent sc options to stdout. (The logical assignment lc: incidentally has

designate auto initialisation functions that will be called prior to the main() function being executed and auto termination functions (executed after the main() returns) and whilst it still generates code by default to check for stack overflow it now supports an option that generates code to allocate a new stack if the old stack runs out (good news for coders who use a lot of recursive code). There's a new 'coverage' option which generates code to identify which portions of a program are being executed by particular test cases. Used with the associated Cover utility this can help you improve validation testing. SAS have incidentally also introduced an EMITS facility (Electronic Mail Interface to technical Support) which allows users to report problems and receive help through Internet.

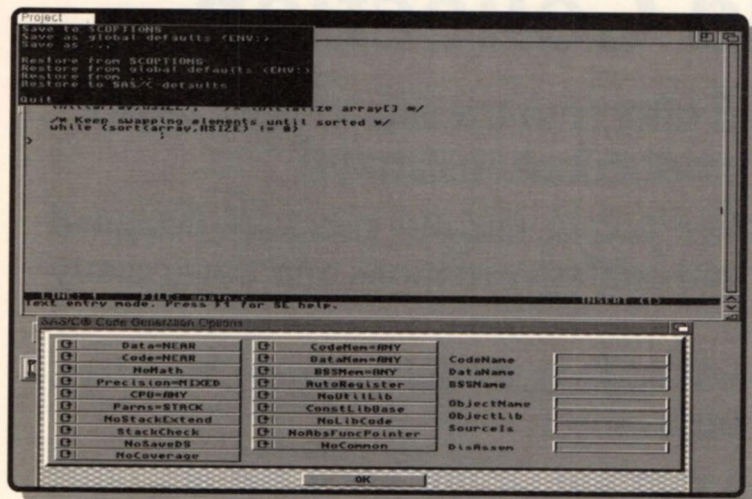
There is a general sense that SAS have been intent on tidying up some areas of the package and possibly breaking some of the old Lattice-oriented ties. I was actually a little sad to see the passing of lse as the name of the editor program, and I'm sure that many Amiga coders will feel that the loss of Blink is tantamount to sacrilege! In many areas however the rationalisation brings substantial benefits.

## conclusion

Version 6.0 of SAS C is brilliant and the new facilities, as expected, are going to provide C coders with significant advantages. SAS C is a big package and needless to say new users, especially those who are actually only starting to learn about C, may feel slightly intimidated at first (simply because there seems to be so much to learn). It is clear that SAS are making a determined effort to minimise these types of 'early days' pitfalls by providing substantially more tutorial help for those new to C programming.

The arrangements used for the main utilities are good and the fact that they are WorkBench as well as CLI/Shell driveable, again helps to make life easier for new users.

Competition? Forget it, because there isn't any. The SAS C Development System is quite simply the best C programming environment available on the Amiga today and it is worth every penny of the asking price! **a**



this and the SAS C Development system is no exception because it is massive!

The software comes supplied on seven disks and as well as the main components which include the editor, compiler, linker, debugger, function libraries and the Amiga header files you also get a whole host of other utilities. These allow tracing and analysing program execution, performing complex file editing operations, managing global symbol tables and function libraries, and for automating the management of large software development projects.

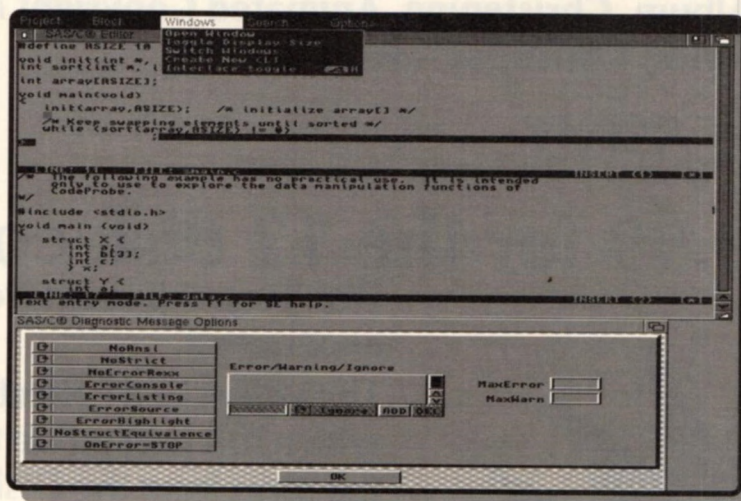
There are global and peephole optimisers that can improve the efficiency of the code you write, a disassembler, and for the more ambitious coders even a 68000 macro assembler is thrown in for good measure. Comprehensive linker libraries are another important consideration because in many ways they are the cornerstone of the compiler system. In short, the SAS libraries, which contain over three hundred functions, are about as good as they come.

## enhancements

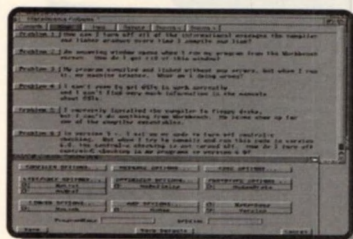
As you'll appreciate from the above sketch the SAS C package is large and because of this it is impossible, in the space of a single review, to examine it in depth.

However, there is now an extensive on-line help system implemented using the AmigaGuide hypertext system. Major improvements have also been made to the optimizer utilities and the compiler's front end lc command has been replaced by a new front end called sc which accepts C source code, assembly

Selected compiler options are stored in an SCOPTIONS file.



Version 6.0 of SAS C has excellent error reporting control.



You want extra Help? You've got it!

SAS C Coders who have large existing projects to maintain may find some command translations a bit of a pain and SAS, who obviously realise this, have included a couple of programs to minimise any version 5 -> version 6 transition problems. This is definitely a good idea and these utilities have got me out of trouble a couple of times already.

## INFO

SAS C Development System Version 6.0 costs £329.00

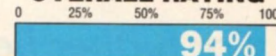
Registered users of Version 5 can upgrade to Version 6.0 for £89.95 and this falls to £84.95 if you are a HiSoft Gold Support user.

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## Ratings: Out of 10

	0 2 4 6 8 10
FEATURES	<div></div>
EASE OF USE	<div></div>
SPEED	<div>NA</div>
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DOCUMENTATION	<div></div>
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## OVERALL RATING





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**Patrick (Speed Freak) Howlett test drives a hot add-on for the Ten-to-Two road hogs.**

# FREEWHEEL



**F**reewheel from Logic 3 is a joystick replacement designed for analog control of racing games, flight sims and any other suitable applications (It doesn't work well with DPaint!!!). Freewheel is a sporty black number with two fire buttons located at the ten to two position and it certainly has a good feel to it. However, its free floating nature is quite uncanny at first and gives a feeling akin to virtual reality.

Pitched for use with Nigel Mansell's World Championship, it's far better to use it with Formula One Grand Prix from Microprose, since the analog response is good and my

view is that F1 is a better game.

The wheel is calibrated to allow a quarter turn left and right and tilting of about 30 degrees back and forward as maximum limits. In use I was wildly oversteering most of the time and taking sharp corners under heavy breaking would see me writhing with the Freewheel in a most uncontrolled fashion. In time though, things do improve, the backwards movement of the wheel is very unnatural and difficult to master but setting up tight limits for forwards and backwards within F1 GP improved matters no end and soon I was blasting round the track one handed, having lots of fun!

## novelty value

If you're into racing games (namely F1 GP) then you will enjoy the Freewheel. It's a neat design and is

quite unlike any other controller giving it a high degree of novelty value. A digital version is also available but I have to ask why? The analog version fills a tiny gap in the market but I can't really see many uses for a digital version.

Until more software comes along which can take advantage of devices like the Freewheel then its use will remain confined to games like F1 GP, but if you are a certified race game fanatic it will certainly add no end of speedy thrills to your racing experience. **a**

## INFO

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## Alex Gian test drives some serious software that feels like a game.

**P**owerful graphics computers have allowed some impressive stabs at computer art, including computer (virtual) sculpture and animation. It is only natural for computer enthusiasts to look for a general-purpose programming package, that will be flexible enough to allow them to try out ANY mathematical visualisation.

formulae are still entered interactively, and can even be altered in mid-plot, but before they are actually plotted, they are converted into a special compiled form. This process is totally transparent to the user, and the resultant code is very fast indeed.

I tested MathVision's speed against a number of interpreted languages - none came anywhere near it. It was also faster than

all sorts of impressive automation techniques can be used, and also allows MathVision to interact with other Amiga programs. The level of ARexx support is absolutely outstanding and includes programs that allow the ARexx facilities to be used (e.g. for animation) even by people that do not know ARexx!

Math Vision also has "hooks" which make part of its internal code public, and experienced C programmers can write their own extensions.

each time you want to create a visual mathematical model. It is also much more fun, and can almost be addictive. It is truly "serious software that feels like a game".

Educ-ators will also find it invaluable for injecting some fun into mathematics, and encouraging pupils to want to learn.

There is nothing quite like MathVision out there, but there should be!

# MATHVISION

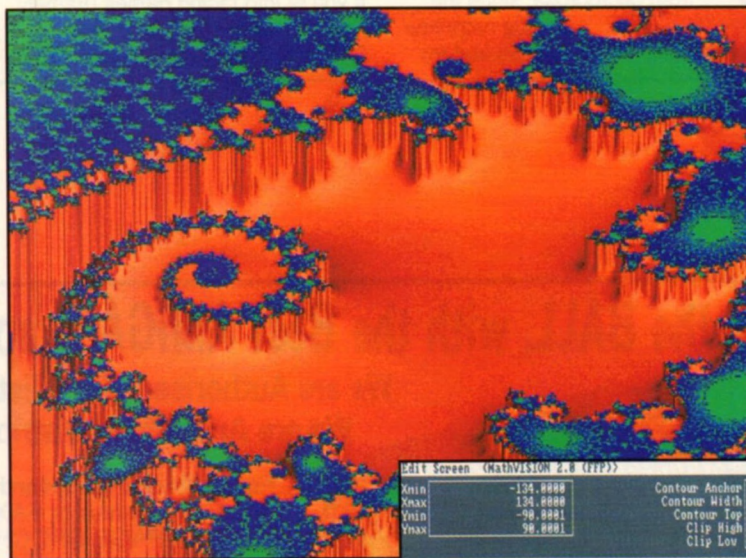
## overview

One of the strongest contenders to fit this bill on the Amiga is the program "MathVision" from Seven Seas Software. It is a general-purpose mathematical visualisation program, which means it is not specialised for any particular task; with a little work just about any image with a corresponding mathematical formula can be created. Operations can also be performed on existing IFF pictures.

### Speed

Mathematical rendering is time-consuming at best, and simple interpreters like LOGO or BASIC just cannot handle any degree of complexity, unless you are willing to render your images overnight!

This is where MathVision makes a radical and brilliant innovation. The



some compiled BASICs and comparable to compiled C. Not bad for an interactive system.

### Interface

Prototyping of ideas is very fast. Each line represents a function, and may be called from anywhere else. There is the choice of a large number of different plotting methods, and it is easy to change parameters quickly and view the results in a number of different ways.

### Expandability

This is by far the strongest point of MathVision. Expandability is catered for in two ways. Firstly the program has got an ARexx port (as all good Amiga programs should). This means that

## Professional graphics prototyping

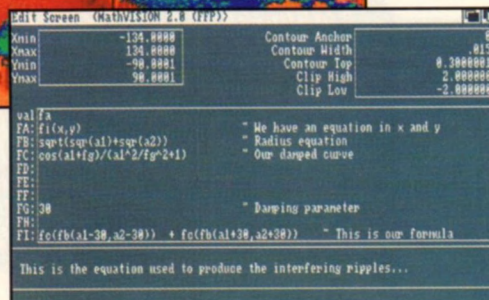
MathVision's ARexx interface adds a whole new dimension to the program. It means that repetitive and complicated sequences can be automated and allowed to run unattended. The main use of this is in the production of animated sequences, which are notoriously time-consuming.

## improvements

One of the things that I did notice, however, was the "feel" of the interface which seemed a bit dated. Even though it works fine, it still does not have the Workbench 2.0 look. I also disliked having to click on each field before I could enter a formula. The authors have assured me that

these improvements will happen soon.

As you can see I really liked MathVision very much. With the arrival of the new AGA chipset it has the potential to become an absolutely stunning program. **a**



## applications

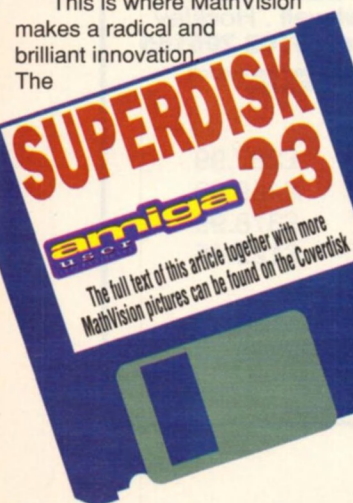
### Education

Using MathVision is much easier and faster than writing a custom program

## INFO

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**P**roWrite was always my favourite among the Amiga's graphic word-processors. In the early days it was the only one that kept up with my typing. Its rivals were often a paragraph or two behind so I had to wait to see what I'd written. It wasn't that I was a demon typist. The programs were s-l-o-w. But ProWrite stayed ahead of the game even with long documents.

That was then, in the early days. Recently, most of the heavyweight word-processors have undergone change for the better. They've got bigger and faster, with more knobs and whistles than most of us know what to do with. Competing for attention are FinalCopy II, excellence! 3, Wordworth 2 and even KindWords 3 (on second thoughts, not KindWords 3, which looks better than it performs).

ProWrite is now in version 3.3.1 - a number that shows it's been around a long time, since 1987 in fact. So how does it stack up against the opposition?

It's still one of the best. And it has unique features found on no other Amiga word processing program. But it lacks one or two of the qualities that are taking its rival programs closer to desktop publishing.

If you want to write a play or filmscript, then ProWrite, which needs a minimum of one megabyte of RAM, is the word processor of choice, since it's the only one that provides the essential 'side-by-side' columns as well as the usual newspaper-style columns.

It's compatible with Workbench 2.0 and 3.0 as well as 1.2 and 1.3. ProWrite's font handling has been improved so that it can work with all printers from dot-matrixes to PostScript-compatible lasers. It now has a Print Preview to display a page at a time in miniature so that you can see exactly what it looks like before you print it.

There's automatic text wrap around graphics. The text can be in a straight block or can follow the outline of the picture. The only limitation here is that the text must wrap either to the left or the right of the graphic - it can't wrap the words on both sides of the picture.

Interestingly, ProWrite uses SoftLogik's HotLinks, enabling it to communicate with compatible programs. I'm still in two minds about the virtues of HotLinks. After all, one of the advantages of ARexx, which is now part of the Amiga's operating system, was that all compatible programs would be able to pass data back and forth between them. Software

companies aren't doing much to spread the use of ARexx. They provide an ARexx port, but leave it up to the individual to add the necessary programs, which can be a tricky task. If they were more wholehearted in their support of ARexx, then HotLinks might seem redundant.

However, HotLinks' popularity seems to be growing among developers so its addition here is useful. ProWrite's use of HotLinks has certain limitations. You can export only text from the program and not graphics, although you can import both text and graphics. And

such as 'colour' or 'favourite' as incorrect.

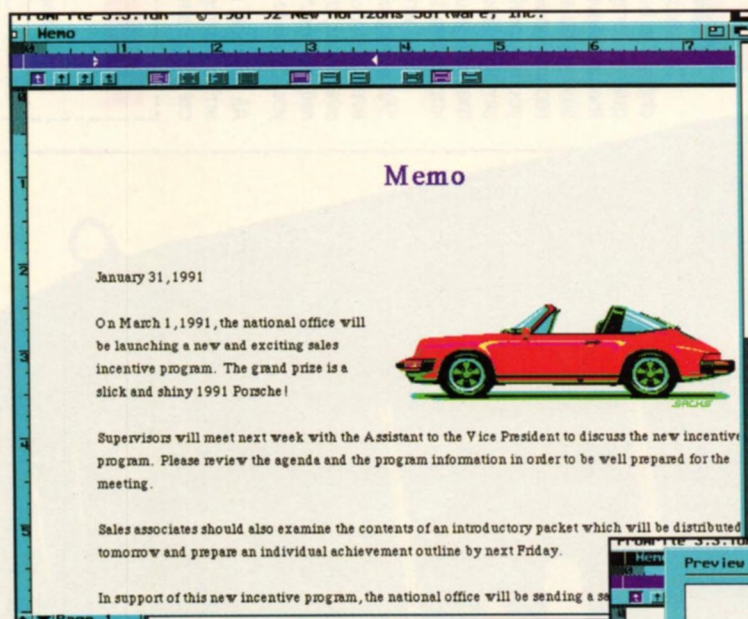
The program's default is to use an eight colour screen, but you can specify any screen mode and any number of colours up to 256, depending on which Amiga you have. With AmigaDOS 2.0 and the enhanced chip set. This can include the super high-res mode of 1280 x 400 pixels, though you only

page, with their position indicated by an outline. You can load any IFF picture, including HAM and Half-Brite modes, but the program can't handle structured graphics.

## 32,000 fonts

The format or style of a block of text can be 'retained' by the program and applied to any other block, which is a useful tool, but ProWrite really needs style tags, as found in DTP programs or FinalCopy II which allows many different styles - say for headlines, subheadings and body text - to be applied or updated. ProWrite does provide different headers and footers for odd and even pages, but it lacks the master-page feature that can be found on most heavyweight word processors these days.

Printing is very good and the program supports PostScript and Colour PostScript, although it comes with no more than four PostScript fonts: Times, Helvetica, Courier and Symbol. But it is



it's a feature that needs a lot of memory before it's any use.

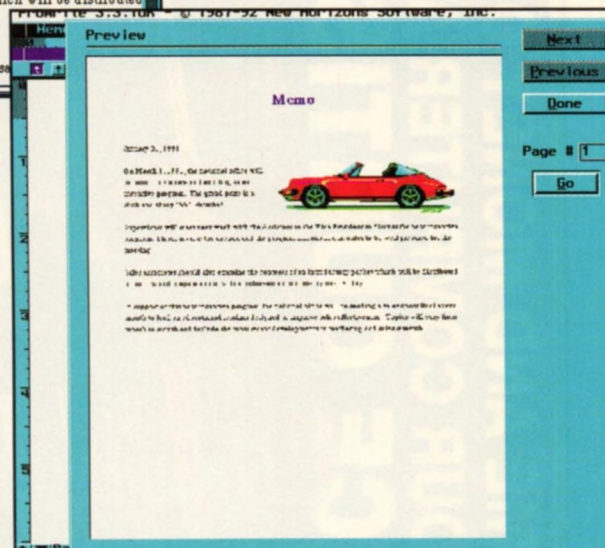
ProWrite does use ARexx for its macros and provides some examples, including some for transposing characters and for adding notes at the end of a chapter. Helpful though these are, I'm not convinced that it's good enough. The example to follow here is WordPerfect's, which allows you to enter keystrokes and save them as macros - much easier than writing an ARexx program. It must be said, though, that ProWrite's ARexx programs are easier to write than most, since they consist solely of commands that are the equivalent of keystrokes.

## eight colours

The program includes a good thesaurus and two dictionaries - one of 50,000 words and one of 100,000 - although these, unlike its rivals, use American rather than English spellings and will flag words

ProWrite has always been great for mixing text and graphics

Print preview is great for visualising the look of the final document



get four colours at that level. The colours affect only the screen display - ProWrite can print using the full palette of 4096 colours.

Loading graphics can be a slow business and their inclusion keeps down the pace of the program's scrolling. But there are two ways provided of speeding up the process: caching the pictures in advance, which can use up a lot of memory, or by hiding them on the

compatible with Professional Page's PostScript fonts, if you have, or can get hold of, them. There isn't, though, any way of downloading fonts not already resident in a PostScript laser printer.

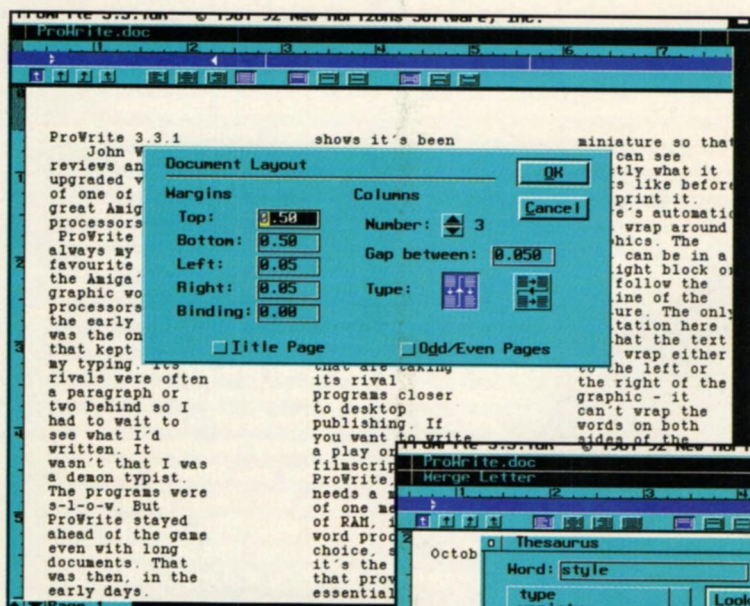
Included for the benefit of dot-matrix users are two fonts that give a good quality print and more are available from New Horizons. For users of Workbench 2.04 and up,



# write

## 3.3.1

**John Walker reviews an upgraded version of one of the great Amiga word processors.**



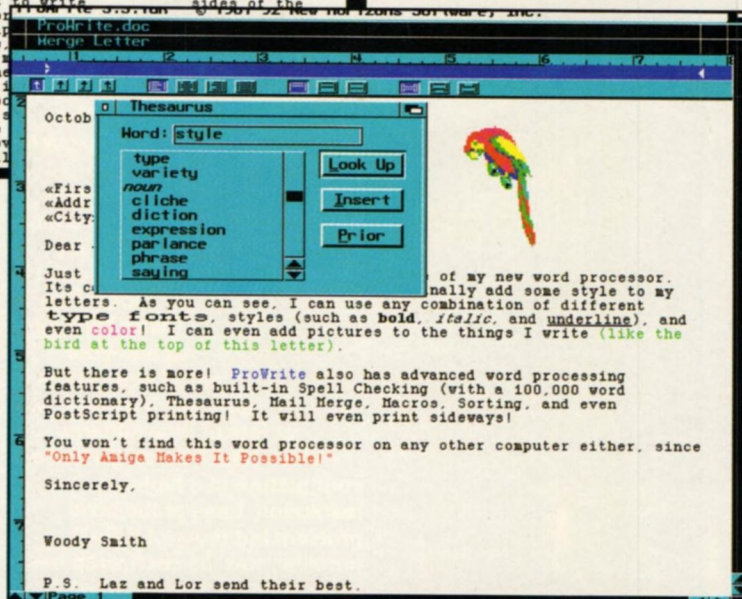
ProWrite 3.3 allows tremendous flexibility with page layouts.

ProWrite is compatible with outline fonts and will generate any size of font you require as you need it. New Horizons claim that the program can handle up to 32,000 fonts, a claim that would be impossible - or at least very tiresome - to verify. A separate program is provided to convert document files from other word processors to ProWrite's format.

ProWrite is a very user-friendly program, with many nice touches to make life easier. It now has automatic saves and backups, for which you can set the number of minutes between saves. I liked its 'Insert Literal' feature for adding those unusual characters, such as

character you need, and it will be inserted in the text. And it will even speak the text for you, using the Amiga's much-neglected speech synthesiser.

Another new, useful feature is its Bookmark, which enables you to mark a place in a document and return to it at a key-press. Unfortunately, you can only have one bookmark per document, which is a limitation. (Even TransWrite, a low cost program, allows four bookmarks per document.) If you value your privacy, then ProWrite will encrypt documents, which then



A thesaurus, 2 dictionaries and even a readability rating are included in version 3.3.

a copyright mark, that aren't found on the keyboard. ProWrite will put on screen the entire font so that you can just click with the mouse on the

can only be reloaded by entering a password.

Its three disks can be installed easily on a hard drive and it

includes a useful System Mover program to move such files as printer drivers, fonts and libraries from one disk to another.

ProWrite is a good word processor with graphic facilities and the ability to use outline fonts with Workbench 2.04 and upwards.

It also supplies a good quality of print using bitmapped fonts providing you have available a font twice the size of the one you're using - if you're printing in 12pt Times, you need to have on disk 24pt Times so that the program can scale down the font from the larger size to provide higher quality hard copy. Or, of course, it can use your printer's built-in fonts, which allow for a much quicker printout.

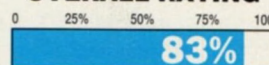
### conclusion

But ProWrite is undoubtedly an excellent word-processor but perhaps no longer quite as far ahead of the opposition as it was. Such features as hyphenation, indexing, contents page creation, master pages and the ability to draw lines and boxes are urgently needed if ProWrite is going to continue to maintain its reputation as one of the very best word-processors around, however New Horizons have lowered the price to £39.95 which must make ProWrite one of the best value for money packages on the Amiga scene. **a**

### Ratings: Out of 10

FEATURES	0 2 4 6 8 10
EASE OF USE	
PERFORMANCE	
DOCUMENTATION	
VALUE FOR MONEY	

### OVERALL RATING



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test drive

# ESSENCE

**Barry McCarthy tells you how to Imagine some real life textures with a "brilliant" package.**

**H**ave you got the 3D program, Imagine? Have you got an Amiga with a 68020 or better? If the answer is yes to these two questions, then you will also want Essence, from Apex Software Publishing. Oh, if you haven't got Imagine and you're into 3D, then why not?

To explain Essence, I'll have to explain an element of Imagine. When you make a model of something in a 3D program, let's say, a wooden door, you will probably want it to LOOK like it's made of wood. Firstly, you can make it a brown colour. Not very convincing really. Secondly and most commonly, you can 'wrap' a picture of some wood (this can be hand drawn in Deluxe Paint or Opal Vision etc... or it can be grabbed from real life with Digi View or V-Lab etc...) onto the door object.

This is usually fine and can produce some stunning results. The problems arise when you have to get close to the door (You walk through it) and your wood wrap starts to look like it's made up of lots of little squares (Which it is. Pixels). So make your picture in a higher resolution. Less of the pixel problem but more of a RAM problem now, as each wrap has to be held in memory. What if you want to alter the colour slightly or make it a bit more contrasty? Tooing and froing between ADPro, OpalVision and Imagine and re-rendering can become a pain.

## algorithmic textures

That's the name of the third alternative to our wooden door example above. This time, use a mathematical formula (algorithm) which describes a wood pattern (texture). The algorithm is presented as a requester in Imagine (no other 3D program currently uses algorithmic textures). From the requester, you can set all of the wood texture's parameters; R, G, B, Ring Spacing, Exponent, Variation, Random Seed. Some textures will have more parameters, some fewer.

The RGB boxes are for the colour of the rings (The base colour is the colour of the object). Ring Spacing is ring spacing in units. Exponent alters the thickness of the rings. Variation just gives the rings a degree of irregularity (or not). Random Seed, a number to randomize the algorithm (the number you choose, if used again, will always produce the same algorithm. Handy).

At first, this all seems a bit daunting and user-unfriendly. Well actually it is really but with a bit of logical application, practice and reading of the manual/s (Imagine 2.0, Understanding Imagine 2.0 - a brilliant book- and Essence manuals), you do eventually get the hang of these textures and they ARE worth it.

## what makes them so useful?

- 1 The textures will render at the highest resolution you can handle, no matter how close you get to them. They are always re-calculated for EVERY frame.
- 2 They are very quickly and extensively adjustable. This includes in-built fades,

Planetary atmosphere created using Essence fractals.



transparency, reflectivity and animation capability for most of them.

- 3 Memory requirements are negligible for rendering.
- 4 Up to 4 can be layered and combined to produce 'super-textures'.
- 5 File sizes are tiny. Around 5000 bytes.

## what makes them not so useful?

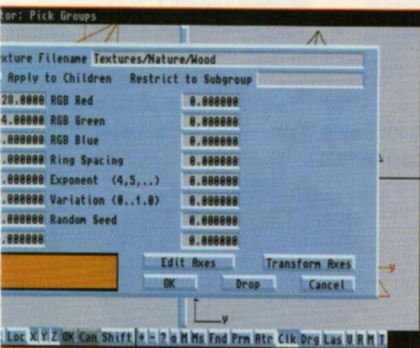
- 1 They are not always as detailed as photos. A rich mahogany would be difficult to simulate with algorithms. But not impossible, with layering.
- 2 Some of the textures really add to rendering times. There are commercial occasions where I would like to use one but end up using a picture for speed.

## and essence is?

A library of over 60 algorithmic textures for Imagine. And a very good manual.

Now you know what they do, I can get on. Imagine comes with 14 textures that are all very simple. The Essence textures are more varied and capable of more flexibility than Imagine's.

Let's take a look at a random sample and I'll explain why they're so fab.



The parameter settings for the wood texture.

## BANDFRACT

Applies a band of colour to your object. Hmmm. Thrilling. Use it with a turbulent edge, anim and fade, to create a travelling wave, like a firestorm or shock impact that decays over time. Ooh.

Use RINGFRACT to make gas planets. A sphere will gain ragged ringed shading. Now add a few

more of differing colours. When animated, the boundaries between the colours will swirl like gas. Spin them over time and the rings will rotate around the planet. Make the rotation rates of the layers different and you've created a dynamic atmosphere! WOWWEE!

Hey, this is just one texture and there are over 60!

## VARYREL BRIGHT

Vary relative brightness. Applied to a single colour object, produces a variation in the brightness of the colour over the whole object. Great for 'real world' feel. Nothing is ever completely smooth.

## BLOBC

The basic fractal noise texture. This is amazingly adjustable and can be used to create anything from

even a 3D chicken wire fence from a flat plane.

## BUMP

One of the most impressive textures. Creates a very adjustable surface of 3D bumps and pits that can emulate the bottom of the sea, sand and sand paper, gravel, water...

This is just scratching the surface. All of the textures have their own characteristics and uses and they are usually very impressive. Combine them and you're really moving.

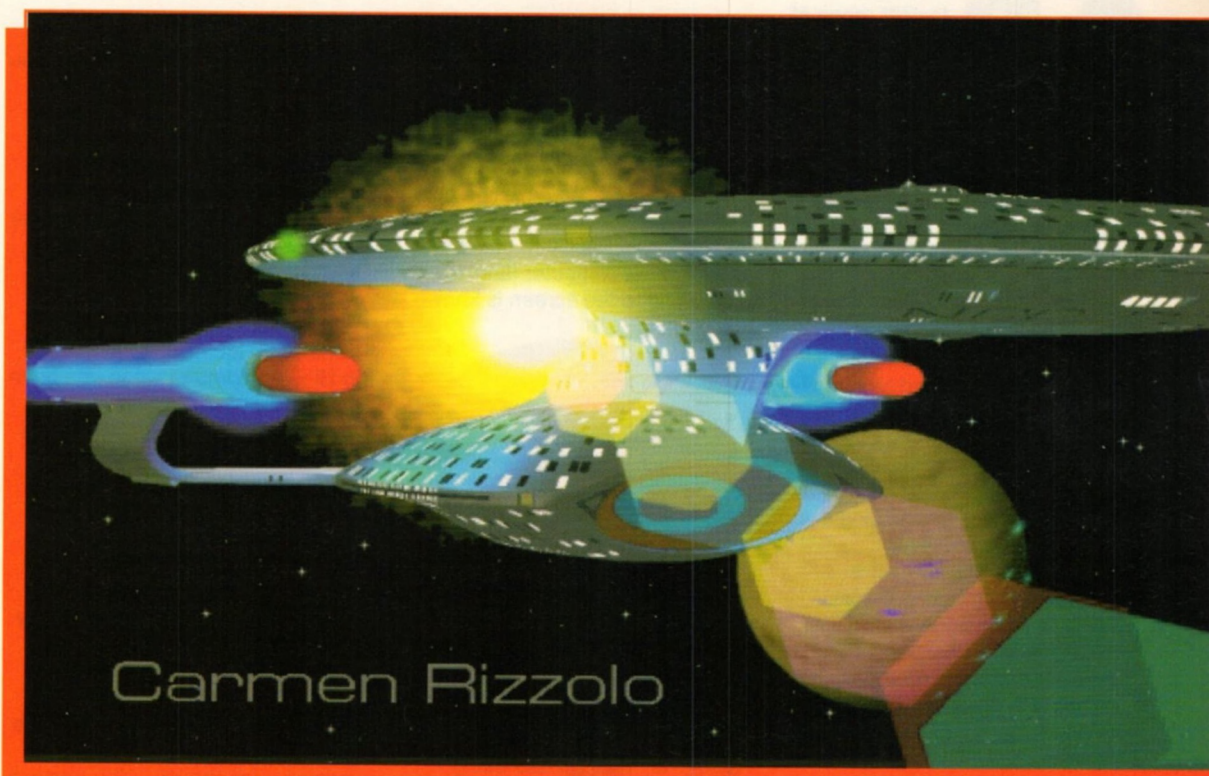
The only real criticism that I have is that they can be a little slow. I'd like to see them re-coded to render faster if this is possible. Still, they are only version 1.0 so who knows.

## conclusion

Brilliant. I can't live without them personally. If you're into 3D and you've got Imagine 0.9, 1.0, 1.1 or 2.0 then buy now. You won't be disappointed as long as you are prepared to put in some time. **a**

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Real world modelling using Essence textures.

## must read

Essence will ONLY work with a 68020 or better (Use a maths co-pro as well). 3D should be done on a 68020 or better anyway. In fact I'd go as far as to say that no Amiga should have anything less in it. Soon they won't.



# mentor 10 things you ought to know, but probably don't, about **COMPUTERS**

1

Over the past decade, the fastest range of computers have been the Cray super computers. These cost more than you can imagine, need to be cooled with liquid nitrogen because the circuitry is packed too densely for air cooling, and are about the same size as a round park bench. I make this comparison because apart from being blindingly fast, Cray's are also nicely padded seats. Cray's are used by people with an excuse for extreme number crunching, such as meteorological offices for predicting the weather. They run UNIX, so you can even use them for wordprocessing if you are a complete show off. Nevertheless, showing off is important in computing circles - when Cray's designer heard that Apple would be designing its next range of computers on a Cray he reacted with surprise - he was designing the next Cray on an Apple!

2

The other place you'll have seen Cray supercomputers is on the silver screen. They were used for creating the graphics in Tron and The Last Starfighter, and one was even used as a seat in Sneakers. In the field of graphics they have been largely superseded by the much cheaper Silicon Graphics machines (used in the Abyss and Terminator 2 - and by Psygnosis for their games development too!) which in turn are likely to be replaced by the Amiga if the DMI Vivid 24 card turns out to be as good as DMI say it will be!

3

In the early days of computers there were no video displays at all. The only way of getting information out of them was by a printer. As a knock on effect of this, in most computer languages outputting to the screen is known as 'printing'



4

The human-computer interface looks like being almost permanently impaired due to the fact that the mechanical typewriter was invented first. The QWERTY layout was actually designed to be difficult to use because typewriters jammed easily if used too quickly. There have been numerous attempts by various bods to replace QWERTY - alternative layouts like Dvorak or even weirder devices like the Micro Writer - but even though these have been proven to be much more efficient than QWERTY they have never taken off. This is due to what may be called the 'IBM PC Effect' - people are unlikely to change their habits and use a much more efficient system simply because they don't like to think they've been wasting their time, effort and money on something else.

5

The first computers (if you don't count abacuses, the Babbage Analytical Engine, and the thermometer - yes, the thermometer is an example of an analogue computer) were made with valves. Although valves are very reliable (and sound much better than transistors when used in Hi Fi equipment) when you have several thousand valves in a machine like the 1945 ENIAC you can expect one to blow every seven minutes.

6

The invention of the transistor in 1950's improved the situation - they were smaller, faster, cheaper, and more reliable. By the 1960's and the onset of the Space Race, however, they weren't up to the job. You needed thousands of metres of wire to connect enough of them together to make something powerful enough for space travel and even then the machine was far too big. Luckily someone invented the integrated circuit or 'chip' which could fit many transistors on to one tiny piece of silicon.

7

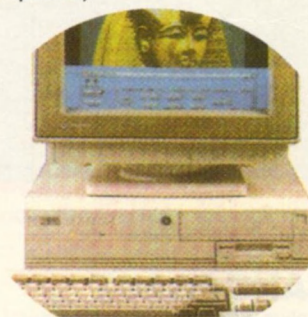
The next breakthrough came in 1971 when Texas Instruments invented the microprocessor - which could fit many more components onto one chip. What would have filled a whole room would now fit onto a chip just a few millimetres wide. This breakthrough made the personal computer possible. We've never looked back!

8

Another example of the 'IBM PC Effect' is the BASIC (Beginners All purpose Instruction Code) language. Any programmer will tell you it stinks. Modern versions are a great improvement, but these days most professionals are using C or Pascal.

9

Microprocessor computing is the only new industry to emerge in the last thirty years (granted, many others have changed a lot since then, often as a result of computers).



10

Computers, like the rest of electronics, are one of the few areas of economic life where prices generally come down every year rather than go up. I still can't afford an A4000 though!

Next month - yes, you guessed it!  
- 10 Things about... the Amiga.



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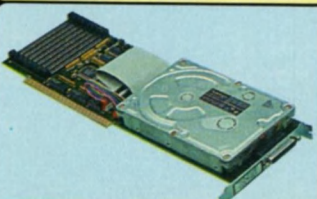
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'... the build quality is excellent - in terms of performance, their gear is the best - their equipment is worth every penny' - 94% AMIGA FORMAT 9/92

## PLUG-IN HARD DRIVE + ACCELERATOR OPTIONS

MODEL	42Mb	80Mb	120Mb	213Mb
A530 COMBO HARD DRIVE & ACCELERATOR	<b>£699</b> Ref: HAR 0962	<b>£799</b> Ref: HAR 0968	<b>£899</b> Ref: HAR 0974	<b>£999</b> Ref: HAR 0983

## PC EMULATOR

### PLUG-IN OPTION FOR HD8+ & A530

- 16MHz 80286 processor
- 287 Maths Co-Processor socket
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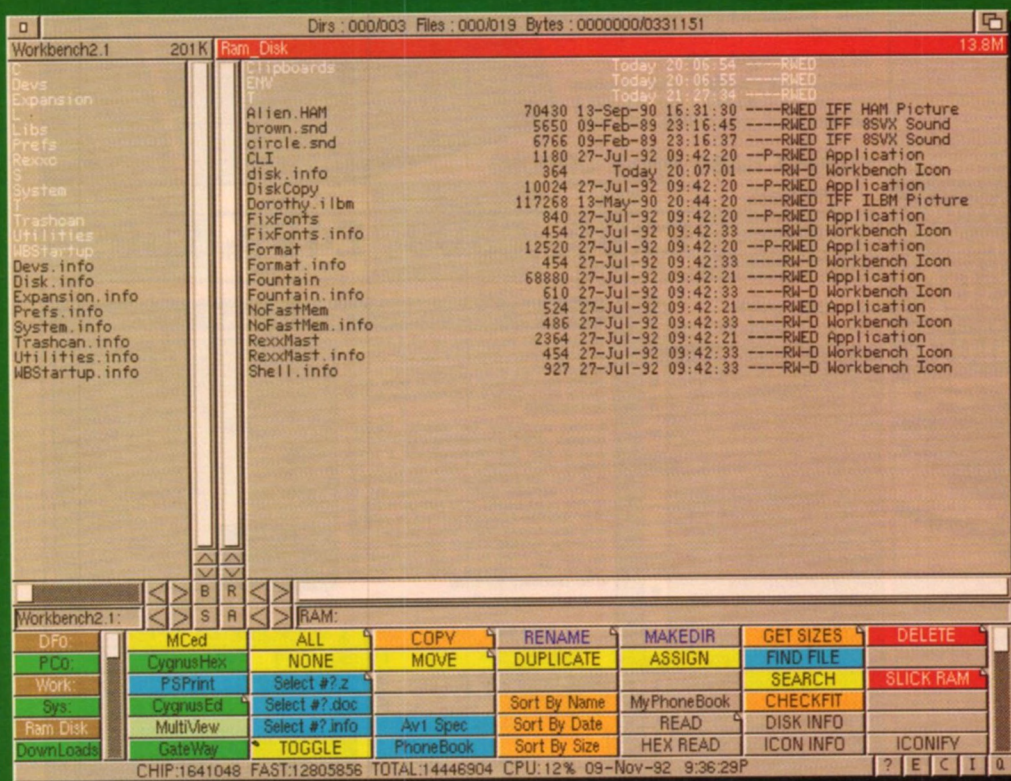


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# CITIZEN SWIFT • 240C

**Gideon Overhead test drives a high quality entrant in the home and business colour field.**



**T**he Citizen Swift 240C is a colour 24 pin dot matrix printer and at £359 it is at the top end of the market. But for that price, there are so many functions available to you that you just don't know where to start. You control all the functions by the use of the menu selector sliding switch. This has four positions, Macro, Temporary, Quick, and On Line. You can then select what you want by pressing one of four buttons to the right of the the slider. The "Quick" mode is so you can select quickly the three most used features, these being the Font, the Pitch, and the Colour - almost like a cache facility on a computer.

If you want the full range of features you have to move the slider to the Temporary position. Here you can cycle through the 33 different features available. You can then appreciate the usefulness of the "Quick" mode. These two modes are all very well while the printer is on but if you want the settings to stay the way you set them every time you want turn it off, you have to save them onto an EPROM (Erasable Programmable Read Only Memory) inside the printer. For this you have to select the slider to Macro mode.

The 240C has nine resident fonts, two of which are Scalable from 8 to 40 point. This is an extremely useful feature for people who would like to print out large titles without the hassle of having to use a Desk Top Publisher to do it.

The print quality in LQ (Letter Quality) mode is excellent. It manages to print 80 CPS (Characters Per Second) at 12 CPI (Characters Per Inch) which is also very good. In draft mode the speed is an incredible 240 CPS at 12 CPI. However this is naturally not so a good quality. My Star LC10 at home prints much better draft quality at half the price but of course at a much slower speed. But if you think about it, if you are buying a 24 pin printer, good draft quality will not be high on your priority list but the level of presentation that this machine offers will certainly impress.

The most striking thing that makes this printer stand out immediately from any other I have seen, is the inclusion of a LCD (Liquid Crystal Display) Information window. Press anything and the display will tell you what is happening. It even starts to talk to you via the use of a scrolly message which gives you help on each mode. As this printer has so many functions and looks very

complex, Citizen have tried to make everything on the printer as helpful as possible. Loading paper could not be easier. For single sheets all you do is drop a sheet into the top and the printer feeds it

in automatically. No need to lift back the roller that holds the paper in place, because this printer doesn't have one.

There is an 8K buffer which is quite adequate. The word "Data" appears in the display when any data is being received or if any is left. When everything is received

## CITIZEN SWIFT-240C SCALABLE FONT PRINTER

Scalable Fonts (SC) from 8 to 40 point Size in :-

CTZ Roman (SC)

AA

CTZ Sanserif (SC)

AA

Also Including Letter Quality (LQ) Fonts in :-

CTZ Roman (LQ)

::<=>?@ABCDEFGHIJKLMNORSTUVWXYZCUEAAAAcEeEII1AAEmE00000y000eLVhfA100RQ0/-++

CTZ Sanserif (LQ)

::<=>?@ABCDEFGHIJKLMNORSTUVWXYZCUEAAAAcEeEII1AAEmE00000y000eLVhfA100RQ0/-++

CTZ Courier (LQ)

::<=>?@ABCDEFGHIJKLMNORSTUVWXYZCUEAAAAcEeEII1AAEmE00000y000eLVhfA100RQ0/-++

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CTZ OCR-B (LQ)

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CTZ ORATOR (LQ)

::<=>?@ABCDEFGHIJKLMNORSTUVWXYZCUEAAAAcEeEII1AAEmE00000y000eLVhfA100RQ0/-++

CTZ

## INFO

Citizen Swift 240C

Price: £359 ex VAT

Contact:

Citizen Europe Limited

Citizen House

11 Waterside Drive

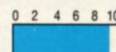
Langley Business Park

Langley, Berkshire SL3 6EZ

Tel: 0753 584111

## Ratings: Out of 10

FEATURES



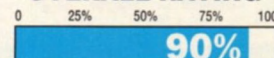
EASE OF USE



SPEED



## OVERALL RATING



then the display also shows the percentage of the buffer that is full. The 240C is also claimed to be one of the quietest dot matrix printers on the market with a minimal printing noise level of 43.0 DB (Decibels). This is achieved by the use of a well designed printer cover which dampens the noise down quite considerably.

The 240C is exceptionally well made and is one of the lightest printers I have come across weighing in at just over 5 kilograms. For £359 you get every feature that anyone has thought of and a few more besides. With colours capabilities of the usual Citizen quality, this is certainly going to make an impact with the user who wants to have top quality dot matrix printing.

**It even starts to talk**

**to you via the use of**

**a scrolly message**

**which gives you help**

**on each mode.**



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# JAM

JUST AMIGA MONTHLY



Established in the Autumn of 1990, Just Amiga Monthly was the first UK Amiga magazine to have the foresight to cut out the gloss and the colour and concentrate on the applications and productivity aspect of the Amiga. Our motto from the start has been Guaranteed No Games, our goal being to help Amiga enthusiasts to get the best from their machines, catering for the out-and-out beginner as well as the more experienced user.

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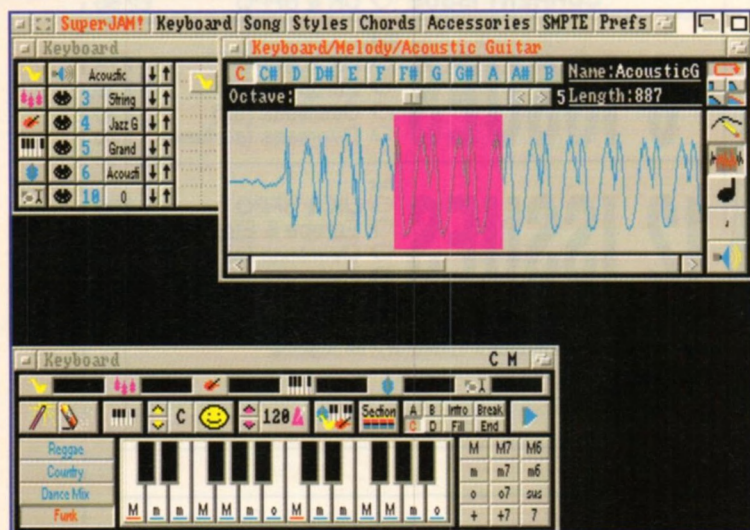
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MIDI and internal sounds works happily together with SuperJAM.

Define Chords window SuperJAM automatically saves any new chords you've entered along with details of any changes made to existing chords.

## style by style

Another new feature in SuperJAM 1.1 is that it allows you to store instrument patches on a style by style basis. This means that when you change styles your MIDI band can be automatically set up so that each instrument uses your favourite patch for that style.

TurboSounds and Samples are now stereo, so they play out of both speakers and can be panned anywhere from left to right in the stereo spectrum (MIDI instrument panning has also been added). The stereo arrangements are set up from the Band Window which now contains a two-dimensional mixing

grid that holds the six icons representing the instruments.

Altering the stereo position and volume of an instrument is easy and just involves picking up the appropriate instrument's icon with the mouse and moving it to a new location - the vertical up or down placement of the icon determines that instrument's volume whereas the position on the left-to-right axis determines its pan position in the stereo spectrum.

## getting into the groove

One welcome change in the section window is the addition of a duplicator button. This allows you to copy a chord by just clicking on it and dragging it to its new location. The biggest change however, as far as section creation goes, lies in a new type of style variation.

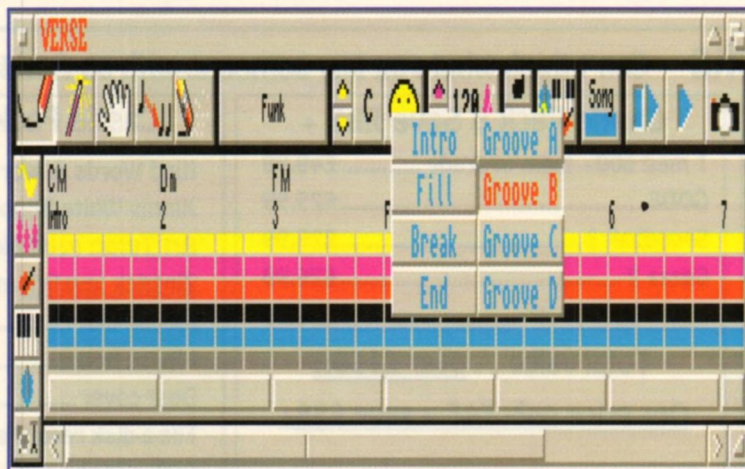
# SUPERJAMMING

**Blue Ribbon have added some juicy new goodies to their SuperJAM. Paul Overaa puts the new package through its paces.**

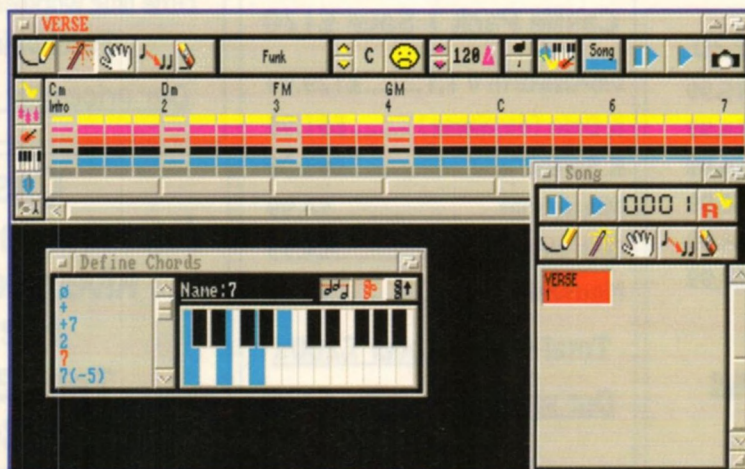
**B**lue Ribbon Soundworks who created SuperJAM, one of the most brilliant Amiga music programs ever seen on the Amiga, have now released an update called SuperJAM 1.1. The update comes on three disks the first of which contains the new SuperJAM files along with the floppy/hard-disk installation programs. The update procedure is automatic and works like a charm (not surprising really since all it has to do is copy a few files and install your name and serial number in the new software). For documentation, you get a 22 page User Guide Addendum to add to the front of your original manual.

The program, as you would expect, is very recognisably SuperJAM but there have, nevertheless, been considerable changes on both the music and graphics fronts. One piece of good news, especially for serious musicians who have been waiting for a little more flexibility in the area of chord definitions, is that SuperJAM now supports chords spanning two octaves. Furthermore chord lists may be loaded and saved from the chords window.

The Enter and Remove buttons in the Define Chords window have been replaced by menu commands and the select button has been replaced by an easy-to-use alphabetically organised scrolling list of chords. When you use the



Groove changes are inserted just like SuperJAM's fills and breaks.



SuperJAM's editing facilities are getting better and better.

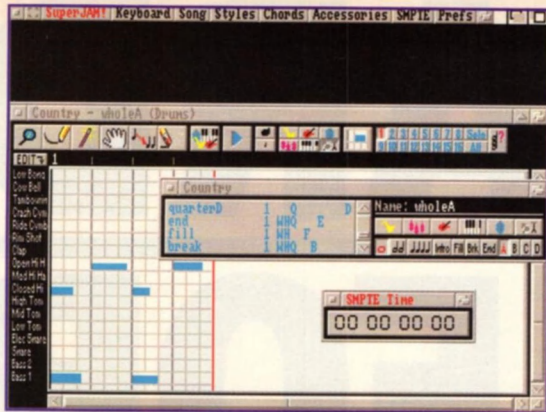
Sometimes, during the course of a song, you may find you wish subtly to change the sound of the music. You may not wish to entirely change styles, but simply alter aspects of the present style. SuperJAM calls these subtle changes 'Grooves' and the 1.1 update incorporates the ability to have up to four grooves in every style.

The Keyboard window, Individual Style window, and Section window layouts have been

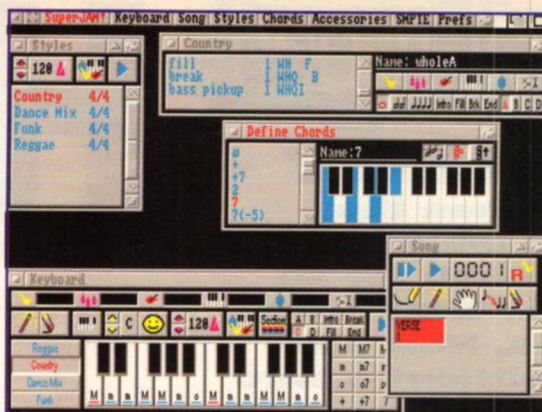
## General MIDI

Late in 1991, the MIDI Manufacturers Association and the Japan MIDI Standards Committee approved a new standard called the general MIDI- Level 1 Specification. One of its main aims is to eliminate the need for patch number editing when playing sequences on different machines and this has been done by standardising the voice-> program change relationships. Many new MIDI instruments, such as the Roland Sound Canvas modules support the general MIDI (GM) standard and SuperJAM support has now been included by virtue of a new GM compatible patch name list.





SuperJAM updated styles now include Groove definitions.



Who needs a drummer when you've got this sort of percussion power?

changed to include Groove support and all of the original styles have been updated. SuperJAM can however still play styles created with the earlier version of the program!

that SuperJAM remains at the top!

The only thing I am slightly unhappy about is the price of the update. The original SuperJAM program cost just £99 and this obviously attracted a lot of Amiga

musicians into the SuperJAM fold. After just little over a year UK registered users are now being asked to pay another £39, ie 40% of the original cost of the program, to upgrade to the new version. I'm not sure that updates, unless they are major code re-writes, should (in relative terms) really be quite this expensive. But things like the new mixing grid, the Grooves variations, Stereo TurboSounds and the extra MIDI control do make the program considerably more powerful. Along with all of the other enhancements, existing users are therefore certainly going to benefit by upgrading to the latest version! **a**

# AGAIN!

## support

Other user interface improvements include the use of double-width/double-height WorkBench 2 screens and WorkBench 2 requester support and One-Stop Music Shop support has also been added. The One-Stop Music Shop is a 16-bit multi-timbral stereo sound card for the Amiga 2000, 3000 and 4000 models (not only does it provides internal CD-quality but it gives you another MIDI port thus freeing your Amiga's serial port for other use). Bars & Pipes users have been given Clipboard support in the pattern grid and novices haven't been forgotten either because an Eas-O-Matic MusicMaker option has been added which, when activated from the Keyboard window's Preferences menu, provides an easy method for non-musicians to create chord changes and melodies at the touch of a key.

## conclusion

From the moment it was released SuperJAM became the most useful automated music composition program available on the Amiga. Even before this update SuperJAM has maintained this position with ease. This 1.1 version update certainly brings a nice selection of enhancements to the program but above all it confirms that Blue Ribbon are committed to ensuring

## SuperJAM Does...

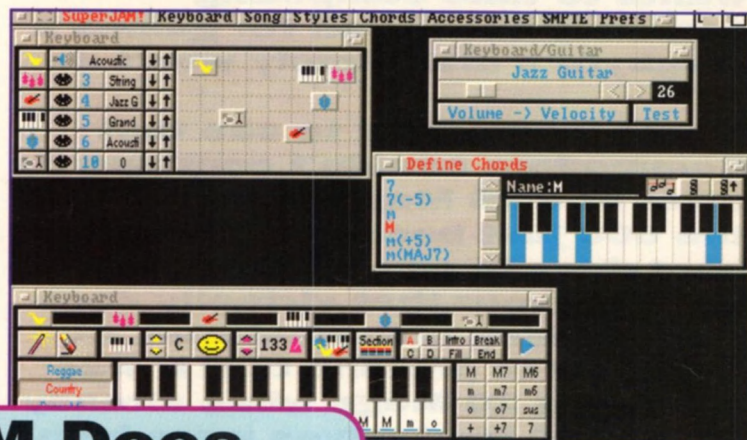
On the Atari ST there have been a number of programs (such as 'Band in A Box' and 'FreeStyle') that, given a few chord directions, can create the accompaniment for songs. This can include bass lines, drum parts and keyboard riffs, with all sorts of fills and variations. Programs like FreeStyle are even used by professional musicians to speed up the creation of backing tracks etc. Having an Amiga program that could work similar magic would be great and that is exactly what the Blue Ribbon SoundWork's SuperJAM program does.

SuperJAM is a brilliantly conceived, powerful, program but despite its sophistication it will run quite happily on anything from a basic 1meg Amiga A500 running WorkBench 1.3 upwards. SuperJAM has a great many facilities and, as might be expected, its manual is quite hefty - almost two hundred pages! Luckily it has been well planned and by providing tutorials and 'whirlwind' tours of the package the process of 'coming to terms with SuperJAM' has been made pretty straightforward. Most people, whether they are musicians or not, will be able to use plenty of SuperJAM's capabilities less than fifteen minutes after opening the package.

SuperJAM calls its silicon musicians 'The Band' and this analogy is particularly apt because the main job of the SuperJAM user is to act as a conductor/arranger to guide the SuperJAM musicians along. The program offers everything from 'make it up as you go along' real-time jamming modes to more formal automated song arrangements. So SuperJAM works much the same way as a real musician and it allows songs to be created by linking shorter sections of music together.

Within the Keyboard window you'll find a gadget called 'Section' and this, when hit, causes the program to ask for a section name and a length. You can enter anything but the idea of course is that you create introductions, verses, choruses etc., ie use names that relate to meaningful sections of music.

When creating a section SuperJAM opens an absolutely brilliantly designed, scrollable, window which contains six horizontal rows of coloured gadgets (these correspond to the six instruments that SuperJAM uses) divided into bars. You can for example sketch out a chord progression containing brief details of the styles, fills, variations etc., to be used and SuperJAM will construct a complete arrangement of that section for you. Complete songs are built by creating sections corresponding to verses, choruses etc., and linking them together. Editing/rearranging your work is simplicity itself and since you can use both internal sounds and MIDI equipment, the program is extremely flexible.



Two-octave chords are a big improvement for the serious user.

## INFO

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(Note: new users will be able to buy the updated SuperJAM package for the same price as the original version, £99)

## Ratings: Out of 10

	0	2	4	6	8	10
FEATURES						
EASE OF USE						
SPEED						NA
PERFORMANCE						
DOCUMENTATION						
VALUE FOR MONEY						
<b>OVERALL RATING</b>						
	0	25%	50%	75%	100	
	82%					



## HARD TIMES?

There was a time when the Amiga was a 256K machine and it would cost you £600 for 20 Megs of hard drive. THEY were the real hard times. Now you cannot buy a PC without a hard drive already installed - even in portables - and the Amiga world is beginning to realise that if it wants to take computing seriously then even for games a megabyte a disk simply won't do.

It was interesting to see that Commodore couldn't continue its offer of a 20 Meg hard drive for the 600 just because the 20 Meg hard drive is so quickly falling out of favour that virtually none now is being manufactured. So CBM had to pretend that it was supplying 20 Megs when already 30 and 40 Meg drives were being provided at no extra cost.

**In this Special Report we have not attempted to go into deep technicalities about hard drives but have tried to make the information as easy to understand as possible.**

**Mike Nelson, Aitor Ibarra and Oliver Davies are all clearly hard drive fans. They rightly warn you that once you have tried a hard drive you are not very likely to want to return to the meagre memory allowed by floppies. The point is also made that the freedom that hard drives bring is not just a question of memory but the sense of using the computer far more flexibly.**

**So whether you are an A500 user or considering buying an upmarket 3 or 4000, the kind of hard drive you acquire needs careful consideration - it's likely to be a part of your computing life for a long time. We hope that if your Hard Times are coming or are already here, you will find this feature can help you enjoy them to the full.**

# HARD FOR

**What does adding a hard drive do for you?**  
**Why bother? Asks Mike Nelson. And gives you a very definite answer.**

**I** I first began using an Amiga in the early days of the A1000 (I had one of the initial machines with a serial number of 700 or so - it was back in the good old days when removing the cover revealed the autographs of all the designers etched into the plastic). Then a second floppy was an expensive luxury costing £200 and hard drives were 10 Mb affairs which IBM PCs had and really there would never need to be anything more radical. My, how times have changed!

The operating system for the A1000, mainly versions 1.1 and 1.2, came on a single Workbench disk and there was a lot of space free on that once you had deleted all the useless files. The need for a hard drive really only became apparent

when you had a large collection of applications and were into compiling programs, as you could get by with a fairly minimal number of disk swaps to do most of your every day processing.

Disk swaps are the one thing that plague Amiga users who do not have a hard drive. It's difficult to contemplate running an Amiga without a hard drive these days and the costs involved are not staggering compared to a few years back. I paid something like £650 for a 40 Mb drive and this was pretty slow compared to the 120 Mb GVP device sitting in my Amiga 2000 at

**Dfo?**  
**DHO?**



# TIMES THE AMIGA

present. The profound difference my new hard drive made to computing on the Amiga, even in those early days, is almost indescribable. Suddenly I could switch on my system and after less than a minute there would be Workbench (OK in its naff old blue 2D form) with a stack of software as high as a house readily available. All I had to do was click on icons and never more would the dreaded "Insert Workbench Disk" requester rear its ugly head.

## installation

Nowadays, with Workbench 2.1 and 3.0 taking around 5 floppy disks, the need for a hard drive is even more acute. You can stash all your Workbench stuff onto the appropriate partition and simply concentrate on your applications, without worrying unduly about whether the right printer Preferences are available and if you remembered to alter the serial port settings on this disk. It also takes a fraction of the time to get up and running from the time you hit the "ON" button.

All in all, it is fair to say that running programs under Workbench on an Amiga is a non-starter without a hard drive. It's easy to keep up with operating system upgrades as Commodore's new installation standard is superb, and people seem to be sticking to it, on the whole. Now if only games companies would take the reins and allow us to install their products onto our machines in the same way that PC users can...

The debate about IDE and SCSI will rage on indefinitely but the fact is on an A1200 or

A600 the IDE protocol is the most cost effective way of beefing up your Amiga. Just get one.

## partitioning

This is an interesting idea which is not really used a great deal in the PC world. Essentially AmigaDOS can split your drive into completely isolated sections - partitions. This is a capability which has significant advantages, particularly when it comes to making backups and restoring the system after a crash. One thing you rapidly learn about computers is that they will fail eventually. You have to ask yourself "What would happen if my Amiga or it's hard drive got eaten by a Fuzzy Mutant Toaster from Outer Space" and then assume it will. If the answer is along the lines of "Yelp! I'd lose all my files and then die horribly", you need to look seriously at backing up your drive.

The way in which the

Amiga works means that a system reset during hard drive access is likely to mess up your hard drive as surely as if a "Mess up your hard drive" command existed, but if you have partitioned it, the chances are you only lose the partition being written to at the time of the catastrophe. One quick way of keeping backups is to write your important files to different partitions as well as to floppies or other devices such as tape or floptical drives. That way you can restore them much more readily in the event of an existence failure on the part of one drive partition.

## copyright

To make partitions you need to go to the HDTOOLS file on

your Workbench partition. Note that people buying the A1200 will not receive this (and the HDPREP) file necessary to format the partitions. In theory, Commodore should supply this to everyone as part of the operating system but being stingy, they haven't and also companies offering to supply you with a drive and this software are technically breaking the big C's copyright by doing so. I'd feel well aggrieved if Commodore were to get heavy with people for doing something they should have anyway, but that's another story. **a**





# HARD TIMES FOR THE AMIGA

## 'These are hard times'

**Says Aitor**

**Ibarra**

**examining the  
different  
options open  
to you across  
the range of  
Amigas.**

**T**he Amiga range of computers has been impressive by anyone's standards. But using an Amiga (or any other computer for that matter) seriously today can prove to be almost impossible without a hard drive at best or at least a second floppy drive. This is because of the limited speed and capacity of a floppy disk. You'll find that without a hard drive you'll be waiting ages for things to load. You'll be continually swapping disks. An extra floppy helps alleviate the problem as disk swaps are reduced (but not eliminated) but

doesn't speed things up. I would say that a basic Amiga (600 or 1200) without a hard drive and no extra floppy is almost impossible to use seriously; a hard drive is the only real solution. You won't see any PCs (spit!) or Macs being sold without hard drives these days.

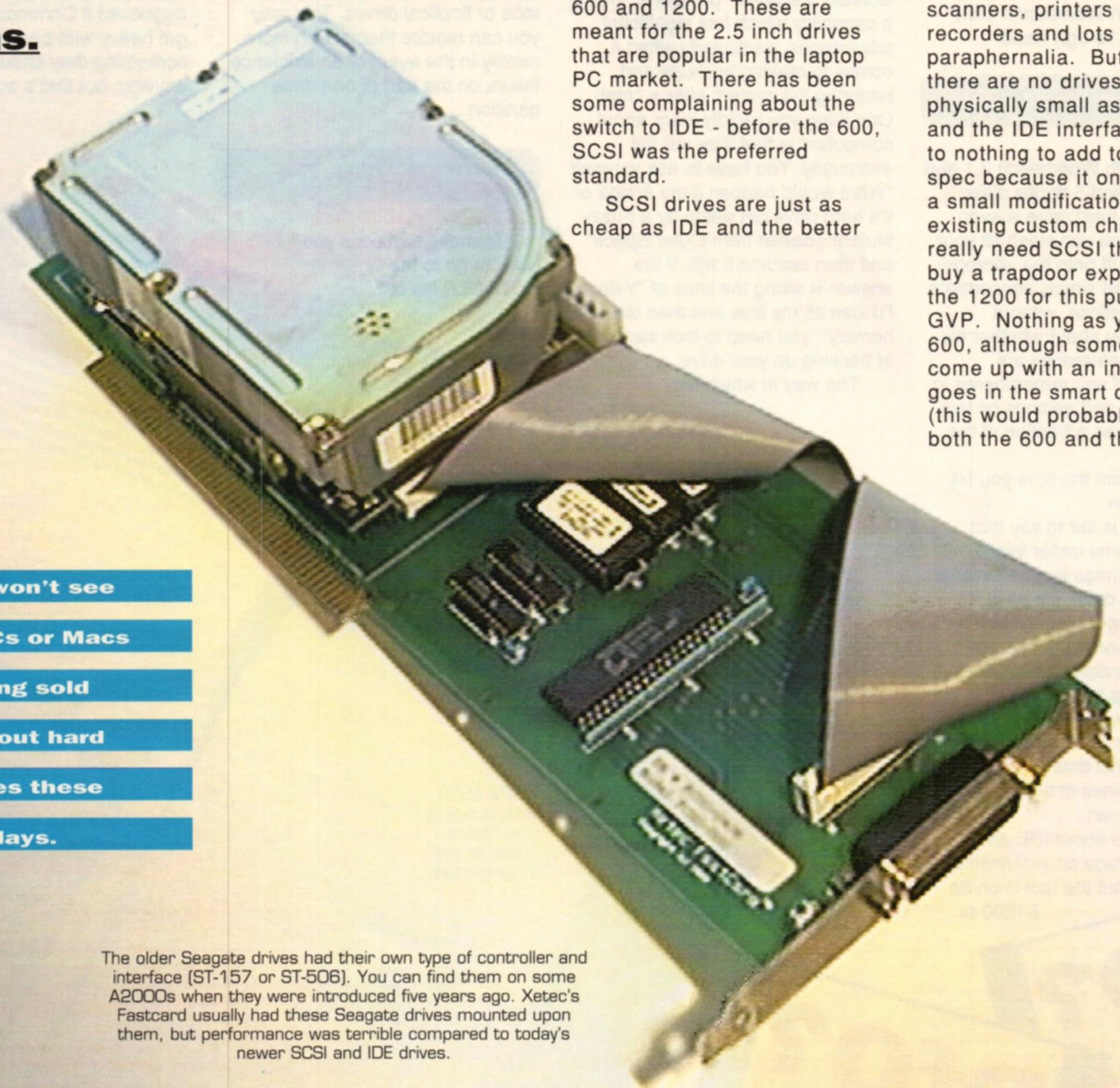
### scsi vs ide

Commodore have recognised the problem of Amiga computing without a hard drive, and now install IDE hard disk interfaces as standard on the 600 and 1200. These are meant for the 2.5 inch drives that are popular in the laptop PC market. There has been some complaining about the switch to IDE - before the 600, SCSI was the preferred standard.

SCSI drives are just as cheap as IDE and the better

ones are capable of much higher transfer speeds. SCSI is a more versatile interface than IDE - you can connect up to 7 devices to your Amiga, and they don't just have to be hard drives. There are SCSI tape drives, removable hard disks, optical drives, CD Rom drives, Silicon Graphics workstations even have SCSI floppies!

You are not limited to storage devices either, there are also SCSI driven scanners, printers (rare), film recorders and lots of other paraphernalia. But as yet there are no drives as physically small as 2.5 inch, and the IDE interface cost next to nothing to add to the Amiga spec because it only required a small modification to an existing custom chip. If you really need SCSI then you can buy a trapdoor expansion for the 1200 for this purpose from GVP. Nothing as yet for the 600, although someone may come up with an interface that goes in the smart card slot (this would probably work with both the 600 and the 1200. **a**



You won't see  
any PCs or Macs  
being sold  
without hard  
drives these  
days.

The older Seagate drives had their own type of controller and interface (ST-157 or ST-506). You can find them on some A2000s when they were introduced five years ago. Xetec's Fastcard usually had these Seagate drives mounted upon them, but performance was terrible compared to today's newer SCSI and IDE drives.



**SCSI drives are just  
as cheap as IDE and  
the better ones are  
capable of much  
higher transfer  
speeds.**

SCSI (Small Computer System's Interface) is a popular choice with most Amiga owners. Most new SCSI hard drives are small, fast, and reliable. Capacities can go up to one gigabyte in size and SCSI II hard drives can transfer 10 megabytes per second!

# HARD DRIVING 2000/1500

If you have a 2000 (or 1500 - they are in fact the same machine give or take a floppy drive) adding a hard drive is easy. You simply buy an expansion card with a hard disk interface (usually SCSI) and a hard drive, plug the card into a slot inside the machine (of which the A2000 has five) and then put the drive into a drive bay, connect a few cables and away you go.

As competition in the A2000 hard drive market increased, 'hardcards' became available - expansion cards with drives bolted onto them - no need to mess around with any cables; and manufacturers started

adding RAM expansions as a bonus.

If you want to accelerate your 2000/1500, you can even buy accelerator cards from GVP that have hard disk interfaces on them as well.

The Zorro II expansion system was very fast in its day (it has now been superseded by Zorro III in the A3000 and A4000) and supported DMA - direct transfer from hard disk to memory without CPU involvement - which allowed for impressive transfer speeds. However, early systems had trouble when DMA'ing to CHIP RAM, as the graphics chips were accessing that area of memory all the time, there could be interference with the display.

Cleverer interfaces would not DMA to CHIP RAM.

Although there were differences between manufacturers over

An extra floppy helps alleviate the problem as disk swaps are reduced.

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# HARD TIMES FOR THE AMIGA

whether or not to DMA, should the cards come with a memory expansion or not; one attribute was almost universal; they were SCSI interfaces. This was a marked contrast to the PC arena, which was largely embracing IDE, as it still does.

Although the market for hard drive interfaces on the A2000 is not as busy as it was (the A3000 has an interface built in; most people who wish to use A2000's seriously have already bought a drive) you can still pick them up. If you can afford to, go for one of GVPs Combo boards (hard drive + accelerator) or even Progressive's 040+32bit RAM+SCSI-2 card (Zeus). GVP, Supra and even Commodore all make well respected cards.

## other amigas

After a long initial wait since the release of the A500 a plethora of hard drives became available for this machine. Most of them plug into the expansion port at the side of the machine. The two most famous units are made by GVP (the deluxe version of this, the A530, which includes a 68030 accelerator, was reviewed in the April '93 issue) and Commodore. Most include an option for Ram expansion.

ICD were the first company to offer 2.5 inch IDE drives for the A500 - some say Commodore got the idea for putting IDE in the A600 and A1200 from them - but generally IDE is rare and most interfaces are SCSI. If you have an A600 or A1200, the easiest option is to add a 2.5 inch IDE drive inside the machine - a mounting plate and interface are already built in. A3000 owners already have an 3.5 inch SCSI drive built in, but there is space for another drive in the machine, and if you are really drive hungry, you can add A2000 controller cards in the Zorro slots, reaching a theoretical maximum of 35 drives! (Four controller cards with 7 drives each, plus 7 connected to the built in interface.)

A4000 owners have an IDE interface and drive, but the A4091 SCSI-2 interface should be available soon for people who want to expand - SCSI-2 is seriously fast, 10 megabytes per second is a realistic figure if the drive is up to it. **a**

**J**ust like the A600, the A1200 is designed to take a 2.5" drive internally, using its built-in IDE interface. I reviewed an A1200 drive with a difference - size - in terms of physical size and capacity. It's a 3.5" Seagate unit with a formatted capacity of 240Mb. That's a lot of storage by anyone's standards - unless your machine is a fileserver for a large network (in which case, why are you trying to use an A1200!?). It gives plenty of room for those HAM8 animations and any applications you care to install.

'Hang on a minut' (as Dan Quayle would say) - 'there's only room for a 2.5" drive in an A1200!' Well, actually, the clever Software Demon people have managed to cram a 3.5" drive in the case. It means things are pretty tight in there, but I've been using the machine without any trouble for some time now. It also means they've been able to put in a drive with a higher capacity and speed than any 2.5" drives yet available. Software Demon also sell 3.5" drives with lower capacities, and these are considerably cheaper than similar 2.5" drives.

Software Demon supply the drive semi-formatted; when you turn the machine on a installation procedure begins that formats the drive and installs Workbench for you. They can't supply a drive with Workbench pre-installed as this would actually be a breach of Commodore's copyright (unless they licensed it, of course). This means you don't get the official Commodore Install disk, with the useful HDTtoolbox program.

## speedy

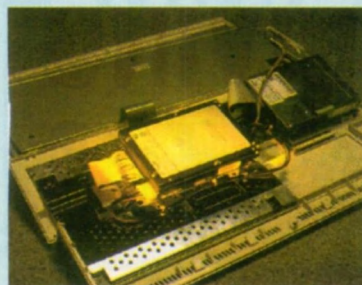
Software Demon's proprietary installation is very nice however, with some flashy animations and sets up a custom backdrop for Workbench. They also supply a copy of the installation program on floppy, along with their alternative to HDTtoolbox, HDPrep. You can use this program to partition the drive to your own requirements if you are not satisfied with the default set up - a 9 Mb partition for Workbench and a 224 MB partition for everything else. HDPrep is quite friendly, although it can't be run from Workbench, but it does have its limitations - it is much easier to

resize a partition using HDTtoolbox, for instance.

It's right speedy is this drive, I managed to load and run ProWrite in 4 seconds. That speed would increase when there's some FAST ram in the system - as I managed to load and run MorphPlus, a bigger application, in less than a second. Bear in mind that with a basic 2Mb A1200 you will not get the same performance as with an expanded machine, and you will have less memory available than if the hard drive hadn't been installed. The performance problem is due to there only being CHIP Ram in the system. This memory is shared by the processor and the Amiga chip set; it isn't as quick as FAST RAM - memory which is accessed by the processor alone. All additional memory is classed as FAST RAM, so adding some will instantly speed up your hard drive access times, and your programs, as well as allowing you to run bigger applications.

If you're thinking of expanding

# Hard Driving the 1200



3 1/2" Capacity, cleverly crammed in.

your memory, try to go for 32bit RAM that fits in the trap door expansion. This is much faster than the 16bit variety which fits in the PCMCIA slot. On the Amiga, each disk device, be it a hard disk or a floppy disk, is handled by its own task, which obviously takes up memory. If you partition your drive, there is one task per partition. This won't normally be a problem with games, as on the A1200 you have 2Mb of RAM and few of them need more than 1mb. And as all A1200's have the capability to run hard drives, games designed for the machine will probably take into account that there may be a few K less than usual. If you intend to run serious graphical applications you'll probably need more than 2 Mb anyway - MorphPlus, for instance, needs at least 4Mb before it's happy and ProPage refused even to load completely without extra memory.

## conclusion

With a hard drive of this size, the A1200 becomes a truly awesome machine. However, if you can afford this much for a hard drive I suggest you also splash out on some RAM. With this added I believe the A1200 is better machine than an A3000 and I would prefer to work with one (although this is due to AGA more than anything else). I've certainly not seen a standard A3000 drive perform as well as this one from Software Demon. The A4000 is faster and more expandable than the A1200 but lacks the PCMCIA slot. I doubt the hard drive supplied with the 4000 will be as big or fast as the unit reviewed here. If you already have an A1200, this drive or one of smaller capacity, should be very seriously considered as it turns the computer into a stunningly effective machine.

## WARRANTY: a word of caution.

Your A1200's Commodore warranty will be voided if this (or any other) hard drive is installed. Don't worry though, as Software Demon will guarantee your machine if they install the drive for you. This warranty looks quite competitive - if your machine goes down they'll collect by courier. The courier who comes to collect will also have a machine to lend to you while yours is fixed - so you shouldn't suffer to many Amiga withdrawal symptoms (ask any Amiga user who has been forced to use PC's and you'll find out how horrendous they can be!). If only other suppliers were as considerate... **a**

## INFO

### Contact:

Software Demon,  
38/40 Queen's Chambers,  
Queen St, Penzance,  
Cornwall  
Tel. 0736 331039

### Price:

When bought with A1200:  
£389 (A1200) + £449 = £838  
When fitted to your A1200  
£449 + £29 fitting service = £478

The fitting service charge includes collection and delivery. Software Demon supply a number of other drives, ranging from 40mb to 170Mb in capacity.



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# HARD TIMES FOR THE AMIGA

**Oliver Davies takes a  
lighthearted look at  
the whys and whynots  
of hard drives - and  
meets the Guru!**

**N**ow that they're finally coming down to an affordable price, you're toying with the idea of buying one. But it's a lot of money and the sales assistants either don't know what they're talking about, or sound like ex-NASA clangle-pin toxicologists!

What you need is a little chat with a friendly hard drive owner who isn't trying to sell you one. You want to go over the basics and get enough background info to decide whether you should spend your money on a hard drive instead of the extra ram, accelerator card or plug in garlic crusher. If I'm right then read on. If I'm not right then read on anyway but don't interrupt.

## technically speaking

"Well It's like a floppy but it's faster and a bit bigger". That was the description my local computer store assistant gave me when I (posing as a customer) enquired about the "HD" in a nearby A600HD. Not a sales pitch to get one fondling for one's flexible friend (fnarr fnarr) so lets expand on it a little.

In simple terms a hard drive is a highly refined floppy disk drive.

It's a sealed unit complete with one or more permanently mounted hard (i.e. not floppy) spinning disks covered with a magnetic coating. The components within a hard drive unit are manufactured more accurately than those in a floppy drive. The disk(s) itself spins considerably faster while the read/write heads fly much closer to each disk surface. The higher disk rpm means that the read/write heads fly over more disk surface area per second and bringing the heads closer to the surface means that the electromagnetic pulses which record information on the magnetic media cover a smaller surface area. The result is a very fast system that can store and retrieve more digital information per track and pack more tracks per inch than a Floppy. Phew !.

In practical terms how many times faster than a floppy drive the average hard drive is depends on the drive you buy and the files you manipulate. The following tables compiled using my pretty average

Rossmoller 105 meg (17ms) drive loading and saving test data to Ram: should give a good indication of what to expect.

These figures will vary from drive to drive and you could spend ages examining and comparing the manufacturers' figures for "head seek times" and "data transfer rates" if so inclined. But unless you have a specific application in mind shaving off the odd millisecond is not that critical. Your money may be better spent on a larger/slightly slower drive.

## how big? how much?

More important than speed is size (Fnarr) and sadly size is related to cost (you better stick your own Fnarrs in from here on). Although prices are falling hard drives are still expensive little boxes, especially when you compare the cost per megabyte with floppy disks. It's presently very hard to quote actual Amiga hard drive prices because the market is developing rapidly

# ROUGH GUIDE TO THE

and there are countless deals and computer/driver combinations available.

Unsurprisingly the larger the drive the lower the cost per megabyte. An A600HD with a 20 megabyte IDE drive might sound tempting costing just #ore than the basic machine. But this works out at around # megabyte ! (compared with 75p per meg for floppy disks). Whereas an 80 meg A600HD costs an extra #hich works out at just #er meg. Yes, you've lost another #ut you've gained four times as much storage. These prices will be different again for an internal A2000 or A1200 drive and yet again for a SCSI hard drive that plugs onto the side of an A500. See the "OK I'll take one" box for a few general hints on finding a good deal for your machine.

What you really pay for with a hard drive is not economical storage but convenience. Being X

Table 1: Manipulating 850K of data in 113 files and 19 directories.

	Loading	Saving	Dir	List
Deleting				
Hard Drive	33s	45s	6s	15s
Floppy Drive	149s	415s	28s	83s
Times Faster	4.5	9.2	4.6	5.5



(or n) times faster than a floppy means you save time every time you boot up or reboot your system. Having 20, 30, 40 megabytes kicking around means you can load your favorite virus checker, paint program, word processor (with spell checker and thesaurus), programming language, music player or 3D raytraced Biorhythm animator before you can say "blimey I've left my disk box on the bus again".

This leads to real time savings, much improved work rates and less disk swapping confusion (once you have the right programs in the right directories). What's more you will hardly ever get that frustrating "Please insert disk X" message and have to fumble around swapping disks just because your Amiga fancies another look at some obscure little routine from March 1991's AUI coverdisk.

The sheer convenience of having masses of storage for use just as a temporary workspace

directories regularly". If you don't it'll end in tears. The main hard drive enemies to consider are probably head crashes, virus attacks and Muddles.

## oh my head!

Remember how we speeded up the little spinning disk and brought the nasty read/write heads really really close to it but not quite touching? Well, if the heads do crash into the disk the surface will be damaged and that means you will indiscriminately lose some if not all of the data on the disk and probably face an ugly repair bill. Fortunately head crashes are very rare (touch magnetic media) as long as you make sure that your drive unit is always kept away from vibration or shocks even when powered off.

Hard drive virus attacks are also not that common, but if they do strike they could infect many files on your drive in a very, very short

hands-on experience with a few makes in your local computer shop while considering the extra features different makes offer. For example:

- On off switch. Ideal if you don't need the drive on continuously, saves wearing out edge connectors plugging and unplugging the unit.

- In use, reading/writing lights. Could be useful for spotting viruses before they get out of hand.

- Memory expansion slots. This can be a cheap easy path to expanding your ram at a later date, well worth enquiring about.

- Accelerator slots. Similar to memory slots, You buy the drive and can simply plug in a accelerator CPU/card at a later date.

- Software. Like a floppy disk your hard drive needs to be formatted and possibly 'Partitioned'.



Many new hard drives are appearing for the Amiga, including some with memory expansion capabilities.

became distant I stumbled across a sprightly character surrounded by a bright red flashing box amidst some incredibly long and completely useless hexadecimal numbers.

Slowly I realised this must be the original Guru. "Tell me, oh

# HARD DRIVE

alone often outweighs the sheer read/write speed factors. Being able to store all the frames for a large animation in one place, being able to search all your text documents in one go; accumulating large font, command, devices and system libraries in one place is not only convenient but virtually impossible to do using tiny 880k floppies (did I say I was unbiased?).

## nice eggs

It can't all be roses, what can go wrong with a hard drive? Storing all your data on a hard drive really means you've put all your eggs in one cliché. So, if something does go wrong you could lose a lot of data in one foul swoop. The golden rule of hard drives is of course "Backup all important files and

space of time. The solution is to always have a virus checker running. Copy one to your hard drive and have it called from your startup-sequence. If things do seem to be going wibbly (technical term) run a checker that examines every individual file for viruses.

Muddles just happen. One day you're happily strolling around acres of spare megs and the next you're in Sinclair Spectrum muddle land. You have to delete a few files to make space but you don't know what programs depend on what other files and you're frightened to delete C/PPXX because you can't remember what it is. The next thing you know you have to spend Friday evening sorting it all out. Muddles too are rare as long as you keep your disk well organised. Add new programs and files into appropriate directories and give them intelligent names so you don't have to guess what each one is next time you look.

## ok i'll take one

So how do you work out the best buy? Well, looking through recent magazine adverts and working out the cost per megabyte for various suitable drives will help you to compare prices. Try to get some

Some drives come pre-formatted. If not is the formatting software provided?

- Connecting cable, if required is this included in the price.

- Power supply. Provided if needed? If not will your Amiga be happy to power your hard drive along with DF1: and that extra memory you got at last year's show?

- Guarantee. Hard drives contain delicate components moving at high speeds, a good guarantee and service contract is well worth having.

Finally work out how much storage you need (and can afford) bearing in mind that upgrading later may be costly and that small drives are comparatively expensive. For most users the first 20 megabytes gets used up pretty quickly.

## oh great guru

Ready to take the plunge? O.K.! But before you go let me tell you my story.

Once when visiting the Himalayas on an club 18 30 holiday I strayed from the pack as they followed the Sherpa in search of a pub with satellite TV. Eventually as the yelps and screams of the mob

Guru" I said "what does the future hold for the Amiga range of computers?"

He sighed and replied "I know not, we are all victims of Commodore's confusing market strategies, and poor after sales service". "However" he paused to press his own left mouse button, "remember this, if you ever buy a hard drive for your Amiga you can never return to a floppy based system".

Everything went blank then after what seemed like a lifetime of clunking, grinding and whirring I was back with the 18 30 gang playing "Garfield the cat" with a busty blond northerner called (sadly) Jeff. Years later I bought a hard drive and nowadays whenever I go round my mate's house I find his 2 floppy Amiga unbearably frustrating and unusably slow. Maybe that's what the old man was trying to say. Eerie huh! **a**

*Oliver Davies is feeling much better now and next month he'll be looking at how to organise your hard drive and some of the public domain software tools that can make the task easier.*

Table 2: Manipulating a single 800k file.

	Loading	Saving
Hard Drive	5s	5s
Floppy Drive	73s	165s
Times Faster	14.6	33

(all timings are to the nearest second)



# test drive

# The

# CDTV

## See

**F**irst came the news from Lew Eggebrecht, Vice President of Engineering, that CDTV technology is to be extended right across the Amiga product line, bringing CD ROM to four million Amiga users.

Presumably external drives will be available for all Amigas. This will really

**Exciting times**  
**are ahead for**  
**CDTV. That was**  
**the message**  
**from the Amiga**  
**Developers'**  
**Conference**  
**held recently in**  
**the USA.**

**Report by Janet**  
**Bickerstaff**

encourage developers, and we will see more information-based rather than multimedia titles being produced. Serious applications which at present come on eight floppies will move to CD. Programs such as Wordworth will be available, complete with tutorials etc for CD ROM users.

## full motion video

Next came the great news that Commodore have a prototype of the MPEG board for full motion video, which is so important for the future of CDTV. This was shown as a technology demonstration. MPEG stands for Motion Picture Experts Group and is becoming the standard for full motion video throughout the industry.

Compression is the secret of getting audio and video data on to a seventy-four minute CD. The ear and the eye are deceived by cutting out unnecessary data. Synchronising the audio with the video is not easy as gaps in speech or music are more apparent than video compression. Full motion video will also come on audio CDs



Jeff Porter - Director of Advanced Technology

with graphics. If you are using an Amiga with an MPEG card installed, then your favourite pop group or symphony orchestra will be there on screen. How soon will it be available? No-one knows. Maybe even later this year.

## new cd drives

Jeff Porter, Commodore's Director of Advanced Technology, commented that CD ROM is going to be available for the A1200 and A4000 machines, but there was no hint of when this will be available. Looking to the future, new CD drives will not need caddies. It was found that they cause more scratches than they save! Also in the future CD drives may run at double the speed. What a prospect is in store for us!

Jeff Porter said "CD ROM is the future for consumer technology. CDTV was the first in the market, followed by CDI, VIS (Tandy) and 3DO. What is going to sell the CDTV is the software available for it. You should not judge CDTV by the slow-moving applications you have seen in the past. Now you hit the button and there is no delay. Our competitors still have to go through the learning curve. The Amiga was ahead of its time in the world of multimedia."



## good news for developers

New software tools to further improve CDTV titles is becoming available. Dave Parkinson has finished spooly.device, which considerably speeds up animations, and Carl Sassenrath is finalising CDXL tools, making it much easier to produce quarter screen video than at present.

## expansion for cdtv

Jim Mackonochie, General Manager CDTV Europe, told the conference "As a stand-alone

player the CDTV is a black box under the TV competing with CDI. However, within the first few weeks purchasers were asking "Where is the keyboard?" which was a bit embarrassing as manufacturing had not got round to making



Spencer Shanson - Amiga Software Engineer (Known in the UK as 'Spence' on CIX)





Setting for the DevCon



them! Now we have internal and external hard drives from third parties, using SCSI interface cards, and a Brickette for the attachment of joysticks and/or a mouse. 1MB RAM expansion and AVM cards, which give the full DCTV palette range, are available for professional users. Just coming is the Blizzard board. Take out your Motorola 68000, slot in the board and it gives you 15MHz with between 2 and 8MB of fast RAM, which is of particular interest to users of Scala as an applications generator."



John Toebes - President Obvious Implementations Corp.

## best selling titles

Jim Mackonochie listed the best selling titles for the last six months of 1992:-

1. Trivial Pursuit **Domark**
2. Sherlock Holmes Consulting Detective **Icom**
3. Sim City **Infogamme**
4. The Tale of Peter Rabbit **Discis**
5. Defender of the Crown **CDTV Publishing**
6. Battle Chess **Interplay**
7. Prehistorik **Titus**
8. A Bun for Barney **Multimedia**
9. Turrigan II **Softgold**
10. NASA - 25 Years of Spaceflight **Troika**

## two more titles for your collection

### Guy Spy

This is the CDTV version of the Amiga game, which received very mixed reviews ranging from a high of 90% down to a low of 33%. This game is definitely for the enthusiast - sharp of eye and quick on the trigger! The game is divided into



UK Developers talk with Jeff Porter - Director of Advanced Technology

thirteen stages as Guy Spy pursues the wicked Baron Von Max in order to save the world. For the average games player the level one is extremely difficult. Guy Spy enters the Berlin underground station and is immediately attacked by superior enemy forces. I died time and again at this stage. Guy's movements are clumsy and his gun seems to have a mind of its own. The graphics are large and colourful, but move oh so slowly. One hint at this stage is to wipe out the first bunch of goons before the train goes through the station, but it is easier said than done!

Once through stage one, there are scenes set in a cable-car, a Swiss mountain cabin, and on the ski-slopes. The action moves to Egypt and our hero has to find his way through the passages inside a pyramid and do battle with various adversaries. I found the game pretty hard but Andrew Bishop of the Amiga CD Users Club tells me that as far as he is concerned it is a great game and he has been locked into it exorcising his addiction!

**Verdict: One for the keen games player 78%**

## Stamps of France and Monaco

Are you a philatelist, or even just a humble stamp collector? Do you have boxes full of stamps waiting to be sorted. This title from Seriat could change all that. For the philatelist this disc is indispensable. It is a unique combination of philately and multimedia and is based on the 1993 edition of the



Ken Yeast - Director of Programming (Pantaray Software)



Carl Sassenrath - President American Multimedia Inc.

catalogue number, by theme or category. There is a glossary of philatelic terms and a help button on screen.

Having selected a particular stamp, you are presented with a good reproduction of the stamp and copious details, such as Ceres number, size, perforations, first day of issue, the engraver, how many printed, confirmation of colour and

famous Ceres "Catalogue of French Stamps". All the stamps which have ever been issued in France and Monaco are listed.

Seriat have included a check-screen in the credits menu at the start of the program so that you can check that your screen is set-up correctly. However, there is a warning that some computer systems have a limited palette and not all the colours of some of the modern stamps, where four-colour printing is used, can be truly represented. The disc is extremely easy to use. You can search for a stamp in various ways - by year (scroll through the dates), by Ceres

any variations, and the catalogue price.

In the Collection mode you can install a floppy disk in your external drive and make a catalogue of your own collection using all the Ceres information. It will even enter the valuation of each stamp and give you the total value of your collection in the currency of your choice. You can also draw up a "Wants list" on a separate disk.

The only drawback - this disc just deals with French stamps. Come on someone - please put the stamps of the world on Amiga CD!

**Verdict: Ideal for the philatelist in the family 81%**

## titles reviewed

**Guy Spy Entertainment RRP £29.99**  
Entertainment International (0268 541126)

**Stamps of France and Monaco Reference RRP £39.99**  
Seriat (010 33 6740 1339)







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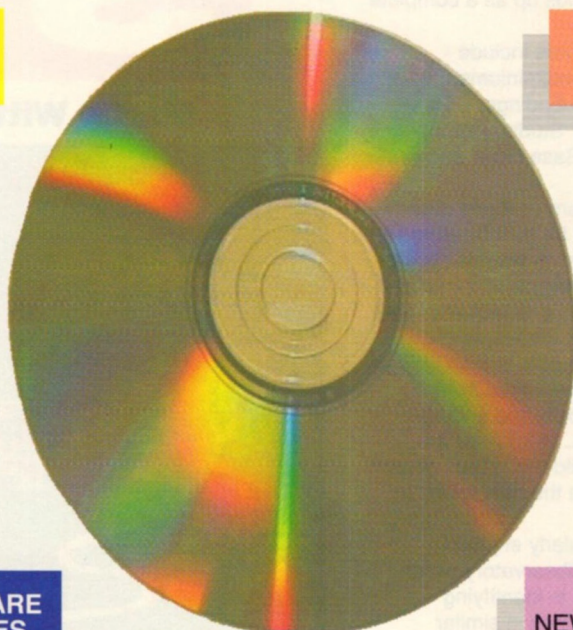
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## Construction

## SET

The word construction kit I was given at primary school consisted of a wooden box with letters with which we were supposed to make words and sentences. As with so many other then apparently useless activities, such as learning our tables by 'heart', word construction also proved useful to help occupy patients in the long stay ward of a psychiatric hospital where I was, no, not confined but employed, in playing Scrabble.

These days long stay mental institutions are rapidly being run down, so the Amiga version of Word Construction may not prove so useful to future psychiatric professionals. However, words are the tools of many trades and learning how words are made up in a fun way can only enhance our use of this language which so many take for granted or misuse.

The program is, of course, designed for school children - in line with key stage 1 to 4 of the National Curriculum. It aims to assist children in word recognition and vocabulary skills in a way which is more exciting than simple spelling and reading programs. Finding out how words are made up and recognising patterns makes them more memorable, the creators of the program rightly consider.

## buildings

The program itself is made up of seven buildings, representing seven ways to make up words.

Each program starts with a skeleton building of scaffold poles, and every correct answer provides a picture block which ends up as a complete building.

The structures include - Consonant Condominiums, Vowel Village, Castle Endings, CTV - Compound TV Studio, Homophone Observatory, Base Hotel and Prefix Factory.

The program contains over 1000 words to be built by word or sound "chunks". A word is spoken in a visible sentence and colourful and humorous graphics depicting the meaning of the words are displayed. The user is then able to assemble a given word from beginning, middle and ending sounded parts. In this way it is possible to build thousands of new words and see the new words in sentences.

We particularly enjoyed Homophone Observatory which offers practice in identifying different meanings in similar sounding words, and Base Hotel which explores the 50 Greek or Latin bases used in 150 words divided into 15 sets. Each set, we learned, has 2 or 3 roots to be used in constructing words, for example - arch, tang and frag.

The bases screen requires the user to construct a word using three parts - a prefix, a base and a suffix. Each time one part is selected a simple meaning of the part is given. For example MISANTHROPIC is made up of mis - bad, anthro - mankind, pic - state.



Martin Witton reviews and reports



## levels

As you will have gathered different parts of the program are suitable for different levels of comprehension, although even the easiest program is useful for older children who still get confused over the spelling of simpler words. A printout of the results is available and useful to keep as a record of progress.

We found the program easy to use, and the manual simple to understand. The actual construction of each building takes time and although repetitive practice is good, the concentration span may be exhausted before the final brick is in place.

As a classroom tool, the program would usefully complement the teaching, particularly for small groups of pupils. Well equipped classrooms with several computers would benefit most, such as those of mixed ability year groups, where the more able children could practice on their own while the teacher gave time to the others.

Word Construction Set was created by the New Zealand company, Lascelles Productions,

who are well known for educational software including the excellent Connoisseur Fine Art Collection which is also on CDTV.

The structure of this program makes intelligent use of the computer to allow the learner - literally - to build up an understanding of the way that words are formed. It stirs the imagination and is likely to have a very good effect on the understanding of any young person using it either at home or at school.

Meanwhile, the parentage, pretending to help out, can use the program while playing Scrabble! **a**

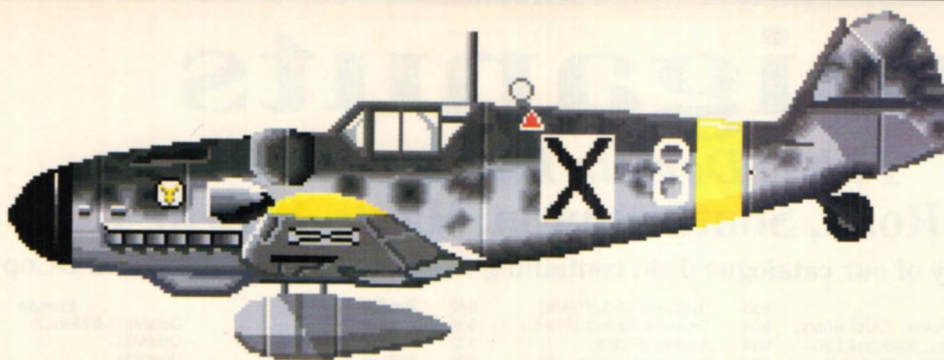
## INFO

Price: £29.95

Contact: Lascelles Productions,  
401 Lascelles Street, P.O.Box 959,  
Hastings, New Zealand  
Tel: 010646 878 9652  
Fax: 010646 876 8888

(Lascelles are looking for a UK distributor)





Bf 109G-6, 6th Fighter Regiment of the Royal Bulgarian Air Force, April 1944.



Bf 109G-10, 15 Staffel, Croatian Air Force, surrendered to allies in Italy 1945.

## spitfire and messerschmitt

### GREENDELL TECHNOLOGIES

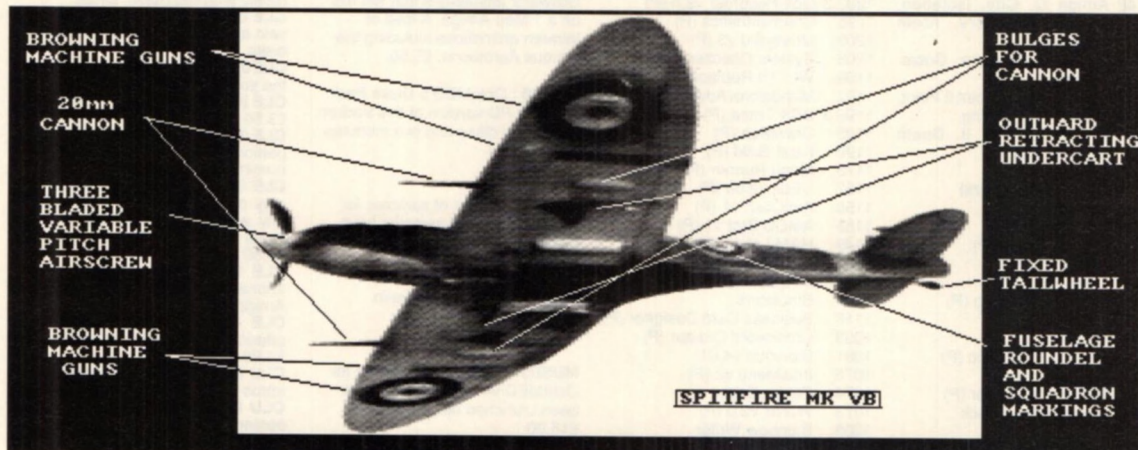
The learning process continues all our lives - or should do - and these two programs will be educational for

conquered the Messerschmitt but the German company lived on to produce, believe it or not, a car in postwar Germany that was based almost exactly on the Messerschmitt fighter's cockpit. Yes, it even had the driver and the passenger sitting one behind the other as in the plane!

Greendell Technologies has chosen, in this the 75th Anniversary

without having to trawl tediously through whole sequences.

Users with Gold Disk's Hyperbook can load the project files into Hyperbook or Hyperbook-reader and can access this through the hyperbook icon on the master disk. Users with Art Packages can access the picture files and load them into the appropriate art programs.



anyone with an interest in fighter aircraft or the history of war in our time..

Presented as books on disks, the programs and accompanying instruction booklets provide in depth information on the Spitfire and Messerschmitt aircraft, perhaps the two most glamorous planes of the Second World War. They were the leading players in the dangerous game of the Battle of Britain which was fought in the skies over southern Britain in the early 1940's. The Spitfire, with its accompanying British fighter plane, the Hurricane,

Year of the RAF, to bring out information for Amiga users on both these rival planes. Each set of information comes with two disks for the Amiga (1MB required) - a master disk and a picture disk. The specification for each aircraft is highly detailed with text and diagrams. Actual pictures of the planes are presented in black and white but the diagrams are in full colour.

The use of the Hyperbook format enhances the programs, and the facility to 'jump about' enables the user to select the information

The disks contain directories labelled 'IFF-Files' and 'Ham-Files'. The pictures in the IFF directory can be used with programs such as Deluxe Paint. Many of the pictures can be used as bitmapped clip-art in desktop publishing programs. The program can also be used with Powerpacker Professional to decompress the PP-Files which contain compressed animations.

Each accompanying information leaflet contains a diagram of the aircraft with labelled parts and specifications.

Besides being of general interest for the enthusiast, the program would be extremely useful for anyone undertaking a project specifically on the Spitfire or Messerschmitt or the Second World War. Whilst a visit to a war museum or exhibition of fighter planes provides living examples, the detailed examination of the aircraft which is presented in the material in these programs would be difficult to match.

Highly recommended as specialist data.

**Price £9.95 (per program), by mail order only to: Greendell Technologies, 25, Woodleaves, Hollywood, Birmingham, B47 5BW.**

## kid pix

Long established Silicon Valley software company, Broderbund Software - remember Loderunner? - has announced the release of Kid Pix for the Amiga. Kid Pix, a paint package for children, has won awards such as the bronze medal in the 1992 Educational Technology awards in the IBM and Macintosh versions and seems likely to hit the spot for Amiga kids too.

Kid Pix has a range of activities for children, including painting a masterpiece, dot to dot and a talking alphabet. Each tool in Kid Pix has its own sound and is said to have appeal for children as young as three years old. Watch for the review in the next AUI.

**Price: £25.99.**

**Contact: Electronic Arts, 90 Heron Drive, Langley, Berks, SL3 8XP. Tel: 0753 549442.**





# Amiganuts

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### Assassins Utilities

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- ASIU 4 Audio Magic Vol. 1 (P)
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- ASIU 6 Mega Boot-Makers (P)
- ASIU 7 Audio-Magic Vol. 3 (P)
- ASIU 8 Multi-Vision Vol. 2 (P)
- ASIU 9 Audio Magic Vol. 4 (P)

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### Assassins Games Disks

We stock all Assassins Games Disks From 1 to 49. Below is a list of just a few of these:

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- ASI 20 Microbes, Hollywood Trivia, Match Patch, Amos Coin Drop
- ASI 21 Zeus, Dragon Tiles, Tetrix, Battlements
- ASI 22 Lemmingoids, Duel, Mouth Man, Wizzy's Quest
- ASI 23 Quick Money, Biplane II, Interferon, Arcadia
- ASI 24 Revenge of The Mutant Camels, Nebula, Croak, 3D Maze, Dux
- ASI 25 E-Type, Mr Brick, Mr Wobly, Hemroids, Copper
- ASI 26 Super Pac-Man 92, Smash TV, Ashido, Bally III, System

- ASI 27 Video Poker, Card Sharp, Montanna, Blackjack Lab
- ASI 28 Doody Game, Dr. Mario, Invaders 2, Flag Catcher, Mad Bomber II
- ASI 29 Dog, Rome, Nova, Bridge Ball, Attacks, Quadrix
- ASI 30 Chrome, Tank Attack, BounceNBlast, Raid III (Total Fire)
- ASI 31 Ishid O Matic, Crazy Pipe, Arazmax, Revolution
- ASI 32 Blob, Fire Fighter, Sector One
- ASI 33 Total War, Hyper Ball
- ASI 34 Trail Blazer, Yelp, Q-Bic, Rush Hour
- ASI 35 Poing, Snake Pit, Jump N Roll, Cybernetix
- ASI 36 Donkey Kong, Sub Attack, Tactix, Mother Lode, Wonderland
- ASI 37 Klaktris, Pod, Paccor, Ghost Ship
- ASI 38 Baldy, One On One, Transplant, Skyflyer II
- SI 39 Blue Moon, Card O Rama, Klondike, Sea Haven, Amiga Solitaire, Streets & Alleys, BlackJack, Spades, Crib Master, Power Poker
- ASI 40 Puz 15, Gold, Rush Hour, Cobra, Dumbbell, Flying, Bunny, Get My Goat, Wordhai, Rabbit
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### Games in General

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- 129 Hack (P)
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**A-Log** (£8.00) From the author of A-Genie, a program for animal breeders.

**Fract2** (£5.00) Adventure creating system. Received well by the press.

**AmiBase Pro 3** (£10.00) Final version of this popular database program. This is more comprehensive than the PD version.

**AmiCash** (£3.00) Home finance program from the author of AmiBase.

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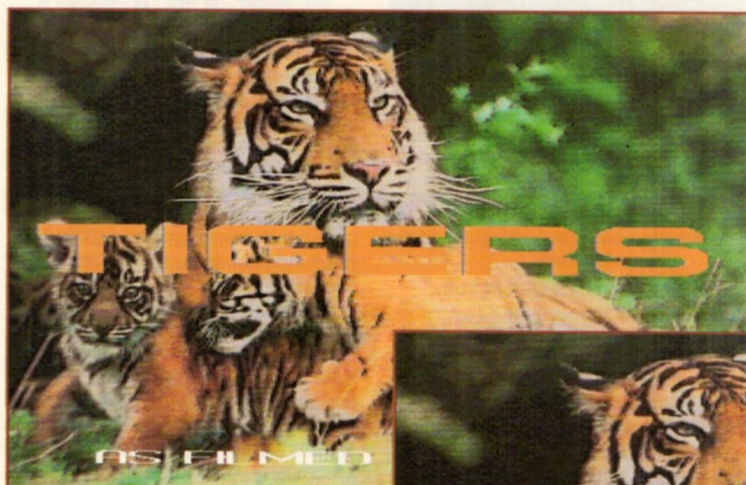
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# FIRST STEPS IN VIDEO

## Part 2



An example showing a plain title and subtitles superimposed on a video scene. They can both be improved to make them more readable.

**L**ast issue we looked at a simple hook-up between the Amiga and a camcorder or video recorder, as in diagram 1. This issue we're going to consider more elaborate setups for more professional results. Although static or scrolling titles are quite satisfactory in almost all cases, there comes the time when you may wish to emulate the titles superimposed over a video image, as in the majority of feature films and many television productions.

### genlocks

To achieve this, you will need an additional hardware device - a "genlock" - which is a smallish box of electronic wizardry that plugs into the RGB socket of your Amiga. Genlocks for the Amiga have been with us from almost day one, and

superimpose our titles on, and the Amiga signal of the titles. These two signals are very similar, but their timing signals have to be 'locked' together, in order for the resulting picture to be recorded correctly.

The new hook-up can be seen in diagram 2. The genlock makes colour 0 from the Amiga transparent, so that any other colours used in the title are the only ones from the Amiga that are

There are two popular, additional features often built in to genlocks. A switch that makes colour 1 transparent instead of colour 0; and a fader to either fade the titles or live video in and out. The more expensive genlocks offer a range of wipes that can reveal the titles in a variety of ways. Too many of these effects can easily lead to an 'over the top' result; keep it simple and harmonious.

All the points made in the last issue, concerning effective titling, apply when using a genlock. In particular, the use of a contrasting outline or semi-transparent background, are particularly useful to ease the reading of any smallish text (e.g. subtitles) when superimposed over a varying colour background. With this in mind, a little preplanning is useful; study the length of video that you wish to



The same titles have had contrasting outlines added via the brush menu in DPaint. They now stand out far more from the background. Commonly used for main titles.

range in price from under £100 to over £500. Even more expensive models with additional features are available.

Genlocks are necessary because although it is perfectly straightforward to record from the Amiga onto a video recorder; as soon as two signals are mixed, the situation, electronically speaking, becomes far more complicated. And here we are talking about mixing two signals - one from the original video material that we wish to



The same titles have now been placed within a semi-transparent grey box, and are more easily read. Commonly used for sub-titles.

recorded. The live video from the other source then shows through where colour 0 was used. So most of the Amiga screen will therefore be colour 0.

superimpose titles over, and judge carefully the best place to put those titles. The top, bottom or one corner may be both clearer and more effective than in the centre. Then →





An example of a bold, simple title produced on a 'transparent' background, ready to be genlocked and superimposed on a live video sequence. This extruded polyfont was produced quickly using the 'Video Titrer' program.

compose them appropriately within your paint/titling program. Try It

When purchasing a genlock, it is advisable to approach a reputable Amiga/video dealer who is willing to set it up - with your equipment if you can take it to the shop - and demonstrate it. In particular, make a video recording of it in use and view this, to get an accurate guide as to its quality and to reveal any defects.

So that's it, regarding a first look at genlocks. They're a really worthwhile acquisition for anyone seriously into making video films.

## chromakey

There is only room here to mention another add-on, not dissimilar to the genlock, that is just becoming available to Amiga owners. That is a chromakeying device, which enables you to do virtually the reverse of the effect achieved with genlocking. Instead of making the background colour of the Amiga transparent to reveal live video, 'chromakey' makes one colour of the live video transparent to reveal the Amiga image. Once again, most of you will be familiar with this technique, widely used in films and television. Prices for this sort of equipment will initially be high, but expect it to come down as more manufacturers like Rombo get their products into the marketplace.

## computerised video editing

You will have to be committed video maker to be considering this next step in linking video and the Amiga, but it is a step that an increasing number of people are taking.

Let's face it - most people with camcorders don't edit what they've filmed at all. How many times have you had to view many minutes of rubbish when "I forgot to turn the camera off!" or "the autofocus didn't seem to work?"

The most elementary form of editing takes place when the cameraman decides to cut out all the rubbish. The simplest way of doing this is to have two similar video recorders and copy your original onto a new tape, leaving out the bad bits. This can be done using the pause control - not advisable for long periods - or by switching the

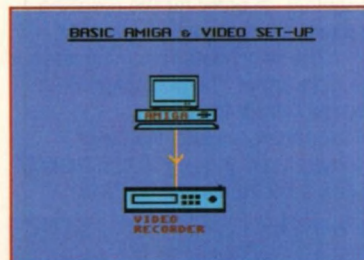
destination machine on and off. In either case, there will most likely be a few seconds at each 'join' when the picture is less than perfect. Much

better than long periods of rubbish or dubious material, though. It's most unlikely that more than a quarter of your original material will survive a first edit such as this.

An improvement over this can be gained by using a destination machine that has 'flying-erase heads' which produce near-perfect joins. Generally, the more modern the machine, the better the quality - in editing, and pretty much all else; a situation we're all too familiar with in computing.

When editing, or simply removing the unwanted video sequences, it is essential to view the material and make a note of the video recorder counter at each edit point.

The other main problem to overcome - when editing like this, is the fact that at every edit point, both tapes are starting off from a stationary position. They take varying times to get up to speed and this acts directly against a clean and accurate



Setup 1. The basic Amiga and video set-up.

edit. In professional video editing studios, this has been overcome by very expensive machines that performed 'A and B roll editing.'

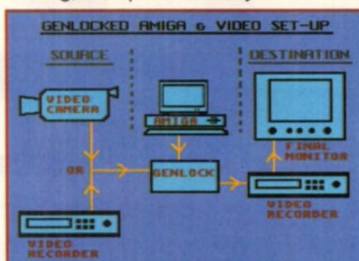
Two source video recorders and one destination video recorder are so linked to provide frame-accurate editing. The inertia problem is overcome by using run-up times on all the recorders. The beginning and end point of a required sequence is found and logged on the source recorder, and the machine is placed into 'edit' mode. This rewinds the source and destination recorders an equal amount - say five seconds - and then starts both machines running. After five seconds, both machines are up to full speed and running smoothly, and at this point the destination machine switches from 'playback' to 'record' and the next scene has been successfully and accurately edited.

Check the quality of the edit on the destination recorder and if it's OK, you go on to the next edit, as before. Having two source recorders gives you added flexibility and avoids a lot of cassette changing. Both video and audio can be edited independently of one another using this arrangement. With the advent of computers - such studios have become increasingly computerized, to the extent that they can virtually be replaced by an Amiga and a program such as the Editman. In fact the Editman is a combination of

program and hardware add-on, with the obligatory 'spaghetti.'

Like the editing studios, these devices can produce clean edits from one or two source recorders (including camcorders) by performing pre-roll edits. They are accurate to approximately 3/5 frames, which is acceptable to most people, bearing in mind that video is recorded at 50 frames per second. Additionally, as well as controlling up to three video recorders, they allow the importing of computer graphics during the editing processes, including titling via genlock as we have just discussed.

This is indeed the future of video editing, both professionally and for



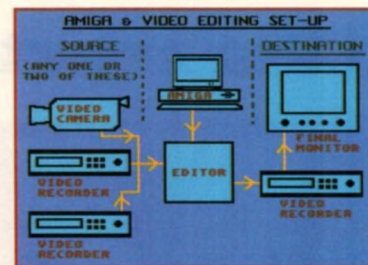
Setup 2 - A genlocked Amiga and video set-up. Either a camcorder or video recorder supply the live video source material. This is fed into the 'video in' socket of the genlock. The genlock is connected to the RGB socket of the Amiga. The destination video recorder is connected to the 'video out' socket of the genlock.

amateurs, and is the start of true 'desktop video.'

Diagram 3 shows this form of set-up. The main requirement of your video gear in such a set-up is that the camcorders or video recorders have 'LANC' or the Panasonic 5 pin connection sockets, which are essential to synchronized editing. They are becoming increasingly

evident on new video merchandise.

That about covers this issue's look at first steps in video; quite advanced concepts in fact, that just a few years ago would have been impossible to consider either, economically or for the equipment available. With such set-



Set-up3 - One or two video sources are connected to the 'video in' of the editor.

These may be camcorders or video recorders. The Amiga is connected to the appropriate Amiga port - as specified by the maker. The destination video recorder is connected to the 'video out' socket of the editor.

Note that in Set-ups 2 and 3, the Amiga can also be considered part of the 'source' as well - providing the graphics.

ups, it can't be overstated how important it is to see the equipment you contemplate purchasing in operation, and you should choose your dealer accordingly. Many people have sought advice, then bought individual items from the cheapest retailer. If anything goes wrong, it is often (and understandably) difficult to get good after-sales service from such retailers.

Magazines, particularly serious ones containing in-depth series and articles at all levels such as Amiga User International, are a great source of additional information. We will conclude this series in the next issue by looking at the choice of video equipment to accompany your Amiga and the use of video to enhance your computing. **a**

## Easy Access

**GENLOCK** - Hardware device enabling the mixing of Amiga graphics and video images, when copying onto a video tape.

**HOOK-UP** - Collection of equipment and the necessary cabling to make a working environment for a particular purpose. e.g. a hook-up to enable outside broadcasting or a hook-up to provide video editing facilities.

**COLOUR 0** - In paint programs, e.g. DPaint, the colours can be considered numbered, in the order in which they appear in the palette. Colour 0 is usually the background colour and the others follow on.

**WIPE** - Optical effect where one image on the screen is replaced by another. Rather than a straight cut, a fade or a dissolve, the image changes by a 'wipe' which may move across the screen, vertically or horizontally, corner to corner or in the form of a special effect. e.g. an expanding circle or keyhole, random dots, zig-zags, etc.

**JOIN** - An edit point in a video or film.

**LIVE VIDEO** - Video scene produced by a camera or video recorder - as opposed to anything produced on the Amiga for recording onto video.

**SOURCE** - Machine or video recorder playing an original piece of video to be edited.

**DESTINATION** - Machine or video recorder recording the final, edited video tape.

**PRE-ROLL EDITS** - Professional style edits achieved by 'pre-rolling' both source and destination tapes to get them up to speed and running synchronously.

**SPAGHETTI** - Collection of cables connecting various pieces of equipment, e.g. that tangle behind your Hi-Fi separates, the video and television or your Amiga and its add-ons.



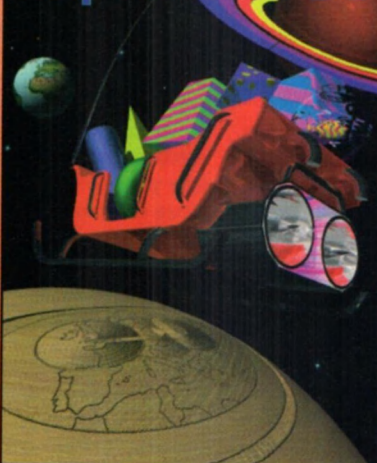
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## **Mike Nelson opens up his new toy and gives you a guided tour around it.**

**S**o now you've unwrapped the packaging off your shiny new A1200 machine and you're wondering what on earth to do with it. Well AUI is never short on ideas for you. So this article will take a look at what the A1200 can do and what you are likely to need to get the most out of it. Before we examine some of the software, it may be a good idea to take a quick guided tour around the hardware. Many new users - and doubtless a few experienced ones too - will be curious about the differences between the older Amiga 500 and 600 machines and the new kid on the block, the A1200.

Previous Amigas have been largely based on 16-bit technology, although the A3000 is slightly more advanced than this as its internals were also of the 32-bit variety found in the A1200 and A4000. What does all this 16 or 32-bit jargon mean? Well, the electronic pathways that transport data around the computer's internal components are able to cope with twice as much information - 32

"channels" as opposed to 16 - at any given time as was previously possible. In reality this means that if the computer can shift data around more efficiently, there is more system "bandwidth" to do interesting things like draw the screen, move objects and make sounds; in a nutshell, the bigger the bandwidth, the better the graphics and sound.

In moving from 16 to 32-bit technology, Commodore were able to make a number of significant advances in the Amiga's overall performance. The cost of 32-bit components has dropped sufficiently for the A1200 even to be thought of existing - and this is one of the reasons for the seven year delay in releasing a really major hardware upgrade. You can look on the older Amigas as being years before their time with other manufacturers being slow to catch up. The A1200 and A4000 are another leap forwards, particularly the former when one considers its amazingly low price. Makers of other low end computers such as Atari, Nintendo and Sega (the last



**The cost of 32-bit**

**components has dropped**

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**even to be thought of**

**existing**

two are computers without keyboards) are still languishing with the 16-bit gear of the last decade, while Commodore owners are enjoying the benefits of an entirely new set of chips.

For those newcomers to AUI who haven't read any of our previous articles on Amiga hardware, the custom chips which make the Amiga so special are worth examining in a bit more detail. At the heart of the computer is the processor - a rather old, but still effective, 68020 in the case of the 1200, and a state of the art 68040 inside the A4000, both made by the American electronics company, Motorola. You may have seen their name on mobile phones too. They make chips for lots of communication uses.

The processor - the CPU, Central Processing Unit - takes care of the day to day business of running programs and tells the specialist chips what to do. On lesser machines such as the PCs, Apple Macs and Ataris, the

processor is also expected to draw the display, make the sound and handle the various input/output gizmos like disk drives too. This all puts a lot more strain on the system and so the Amiga appears to have more time to do things (or can do more in the same time, whichever way you want to look at it) because it has dedicated chips to do the graphics etc.

The new chips have been given the pet names of Alice, Lisa, Buster and Paula and the details of what each of them does in the overall picture is beyond the scope of this article. However, suffice it to say that it is these lumps of silicon which give the Amiga incredible versatility in terms of graphics and sound, making it without doubt the most awesome games machine around. This isn't to say that you can't do much else with it (far from it) but where do you go from here?

much of it will work on the A1200 (Commodore reckon 60%, but that's just contemporary stuff - the older games are less likely to work for various reasons, but mainly due to dodgy programming). In the April AUI, you will find a Soapbox article about the state of the games market and where a bit of extra effort is needed, I got a bit of a moan about programmers off my chest there, so I won't dwell on that now. Anyway, loading games is about the easiest thing to do with an Amiga, and the operating system is much more fun.

### **workbench**

Supplied with your A1200 is a motly array of some five disks which together comprise the Workbench. This is the Amiga's equivalent to Windows on the PC, although it took Microsoft years even to get close to the Amiga, and still the Commodore machine knocks spots of the rivals. Essentially, it is the interface between the computer and the user and for the most part eases the interaction

### **games**

This is the most obvious arena in which the Amiga can perform. There is a veritable mountain of games available for the A500 and

# **FIRST STEPS WITH THE**



# A1200

between the two. The olden days of computers involved typing lots of weird commands in a pretty hostile environment of abbreviations, options and templates. Nowadays the mouse and menu "WIMP" system rules the day and the next step is voice controlling your computer. It will happen...

The A1200 is shipped with the very latest release of the operating system, 3.0, and a very comprehensive affair it is too. Because of this complexity, and the fact that most people will only have a single floppy drive, using Workbench on a

your document. The computer then has to decide which printer you have connected and the best way to talk to it. To this end there is a pile of available files called "drivers" and the appropriate one is loaded from the disk at the right time. The only alternative to this is to have everything stored on ROM memory inside the computer and

available at all times. Not only is this wasteful of resources, but the only way to update a ROM is to wrench it out and replace it, so it's inflexible.

The solution to this problem (which occurs on all computers) is to go for a hard drive. This is a small

## EASY ACCESS

**CPU** – The Central Processing Unit is the chip at the heart of any computer and controls the system according to the instructions that it fetches from memory.

**16/32 bit** – A 16 bit CPU can read and write data 16 bits at a time whereas a 32 bit CPU can manage 32 bits at a time. A bit is the smallest unit of stored information, i.e a 1 or a 0.

**ROM** – Read Only Memory. An area of memory used for permanent storage of important data such as essential system commands.

**RAM** – Read and Write Memory. Free memory for any use, measured in bytes, kilobytes (Kb) and megabytes (Mb).

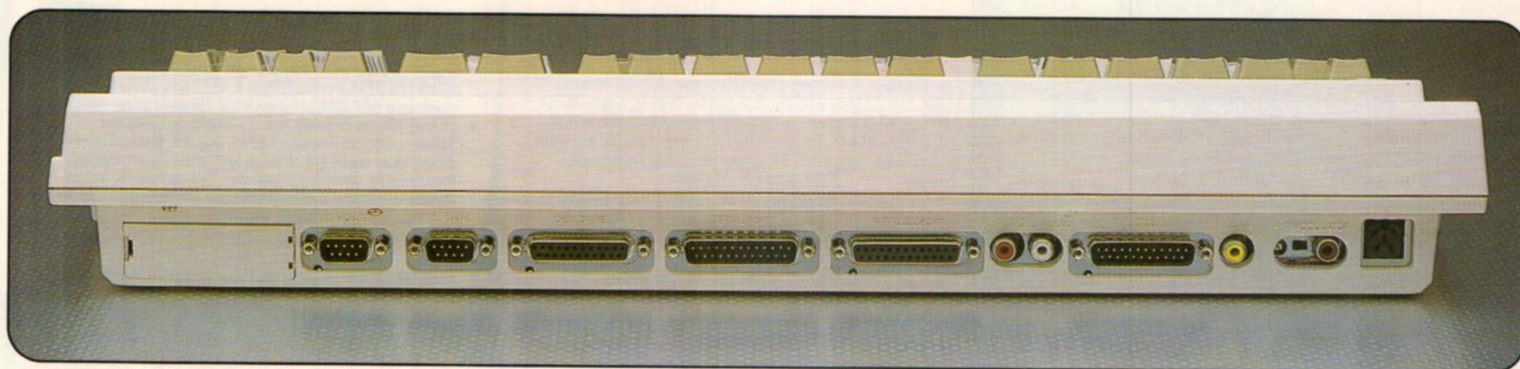
Every time you try and do

almost anything, the

computer will ask you to

"insert some disk or

other".



stock machine is irritating to say the least, as every time you try and do almost anything, the computer will ask you to "insert some disk or other". This can be extremely annoying and rather perplexing to the new user, so a bit of explanation is warranted. In fact, I would go so far as to say that a single drive Amiga is really only useful for playing games as to try and do anything with Workbench programs is asking for hours of disk juggling, endless requesters and hair pulling. Why is this?

The Amiga's operating system (the programs that make it tick) is divided up into handy chunks which are spread across those five disks. Say, for instance, you are running a word processor and you decide to print

device (about the size of a packet of cigarettes that fits inside the machine, and so requires a bit of technical knowledge to install. You can think of a hard drive as an enormous, fast, floppy drive which you can't replace. Typically these days, the minimum size is around 40 Mb (or about 45.5 floppies) but increasingly people are resorting to 80 Mb drives. Don't let anyone try and flog you a 20 Mb drive if you're remotely serious about your Amiga - even a game will eat away several megabytes a time and Monkey Island II took over 11 Mb!

Adding a hard drive means that all your application software can be available without you having to hunt through hundreds of floppies in the depths of a dingy box, only to find disk three is missing. Having all the operating system present is also a Godsend.

Believe me, once you've used an Amiga with a hard drive, going back to a floppy is like swimming through toffee with one arm behind your back. The only drawback with a hard drive is the initial outlay - you are looking at over £200 for anything halfway useful.

The cheaper alternative to a hard drive is an extra floppy drive which does alleviate some of the grief. These should set you back around £50, but be careful as there are some pretty foul rumours going around regarding compatibility with regular Amiga

drives. There is also the possibility of double density drives which can stash 1.76 Mb of data and although these are pretty scarce at the moment,

this is one obvious expansion to think about for the near future.

Workbench is a great first step in exploring the possibilities offered by your Amiga 1200. In

the next few issues we will take a more detailed look at the various aspects of the Amiga's operating environment, including "Preferences" and the Shell. Until then, happy hunting. **a**

Don't let anyone try

and flog you a 20 Mb

drive if you're remotely

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**WARNING**

Due to the exchange rate, many items in this ad may increase in price - including some CBM, HP + GVP product.  
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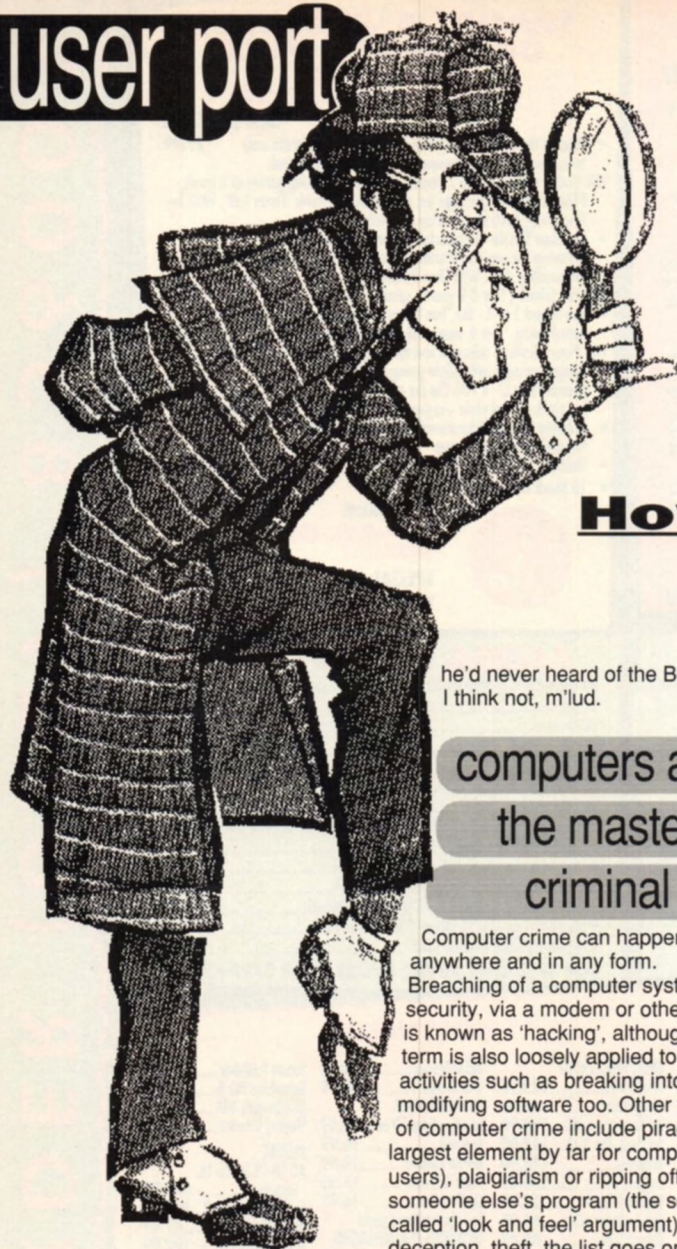
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## Hacking, snooping, fraud, piracy, Patrick Howlett plays private eye and investigates.

he'd never heard of the Beatles? I think not, m'lud.

### computers and the master criminal

Computer crime can happen anywhere and in any form. Breaching of a computer systems security, via a modem or otherwise is known as 'hacking', although this term is also loosely applied to other activities such as breaking into and modifying software too. Other forms of computer crime include piracy (the largest element by far for computer users), plagiarism or ripping off someone else's program (the so called 'look and feel' argument), deception, theft, the list goes on.

### amiga 600

Such is the broad and somewhat intangible nature of computer crime it is probable that most of it goes unnoticed or unreported, difficulty in enforcing the laws that exist is seen by many as the reason for the growth in wrongful use of computers and software. Big companies, like banks, for example are loathe to report that they have been robbed in "white collar" crime for fear it reflecting on their stock market or credit ratings.

Incidents of computer crime range from the bizarre to the sublime, and over the years AUI has reported on some very devious and unscrupulous activities. We recently received a letter from Portugal where it seems, 2 computer fanatics with basic equipment including an Amiga 600 had tapped into a credit card company, altered the records relating to their cards and then went on a shopping spree. The records were altered so that the bills were sent to American card holders instead. The police suspected a massive operation but were surprised to find only 2 people behind the fraud. The card company were, not surprisingly, tight lipped and extremely embarrassed about the incident.

Another incident involving fraudulent use of computers on the international finance market led to 3 million pounds 'disappearing' from the datasphere. After investigation the UK company involved made an arrangement with the perpetrators, so that nothing would ever be disclosed about the incident and in return no prosecutions were brought. Companies often abandon hope of recovering 'electronically' stolen funds, preferring instead to act discreetly for fear of a damaged reputation.

### from the ridiculous to the sublime...

Dongles, manual protection, FAT tracks, you name it, it's been tried. Nominations for the award of the most original and unfriendly copy protection include the optical decoder from Rainbow (remember them!). This device was placed on the TV screen and decoded two letters from the display. The trouble was that it required pixel perfect placement and a clear TV display. Worse still, mine wore out after a while and went all limp!

Another contender, the colour chart (intended to render photocopying useless) manual protection is not popular but this extreme form can be a real pain. Finally, the dongle, prone to being lost or left in place to crash other software, this useless (literally) piece of hardware will probably end up as one of computings great novelty collectables!

### how does it happen?

You may just recently have seen the news reports of Paul Bedworth, the 19 year old student who was taken to court for 'hacking'. Using a BBC micro and a modem he gained access to several pieces of sensitive information using only his knowledge of

communications and databases plus a dollop of logic and cunning. His activities are reputed to have cost The Financial Times newspaper £20,000 in phone bills alone and wrecked the operation of a leading European medical organisation's computer for a few days. It may sound like fun for a teenager to defeat the big companies but at what cost to the people suffering in hospital?

Computer hackers are only too aware of the fallibility of most computer security systems and employ simple procedures to obtain passwords to company databases and individual accounts. The case of Paul Bedworth was dismissed due to the defence council claiming that he showed 'irrational and obsessive' behavioral characteristics. But the Scotland Yard Computer Crimes Unit were disappointed that the public, and the jury's, favour was with the well-presented, intelligent young man who had become a "compulsive hacker".

The officers and computer experts involved in catching computer hackers may find themselves in a frustrating position, unable to secure convictions (although in the latest case two other individuals were actually convicted and are awaiting sentence). But the UK does at least have laws on which to base investigations into hacking. Several EEC countries have no laws whatsoever covering computer hacking and although our laws may be insufficient, there is here a sense of unlawful activity placed on those who indulge in computer hacking.

Interestingly, in ex-Communist countries like the Soviet Union, sorry Russia, hacking is prevalent partly because it used to be considered a gesture of defiance against the old regime. Then, condemned as economic terrorism by the authorities, it was encouraged and even financed as "resistance" by the CIA for its own purposes. Now it's difficult to get the hackers to break the habit. Yet the USA wants to be very tough on intellectual copyright etc in the commercial deals it's doing with the ex-Eastern Block. It's amazing how "resistance" can become "terrorism" again when it no longer suits your policy, isn't it?

**C**omputer crime has more than its fair share of mystique and hype, but is set to become the scourge of the 21st century. Piracy has spread rapidly from leisure software into all areas of computer use, and is costing the industry millions. The Government have at last responded to the growing concern about privacy of information. Scotland Yard have set up a computer fraud squad. Where will it all end? One thing is sure, computer crime will continue to grow and with the likely developments in technology could become an epidemic of massive proportions and even threaten our lives...

The public are slowly catching up with the incredible pace of technology but we Amiga users are a minority bunch who actually understand, albeit in varying degrees, the fundamental concepts of computers, data, code, information and so on. To many people these words have little meaning and before you can say technofear, are dismissed as the domain of the boffins and computer junkies. This does little to strengthen belief that computer crime is as real as theft, fraud and deception. After all, can we expect a judge to comprehend fully the value and meaning of program code and data if he is the kind that used with pride to claim that



# PUTER



## software theft

Software piracy is not as popular with the press as hacking but is undoubtedly the most common form of computer crime. The computer industry views this as the most serious threat to the continued existence and development of Amiga software and hardware, although perversely, sales of computers have undoubtedly been helped by the abundance of pirate, so cheap, software.

Heated debates on piracy have been popular over the past few years but have died away recently, perhaps the sheer scale of the problem has at last made an impact and we all sit in guilt ridden silence thinking about that dodgy copy of something or other lurking in the disk box.

A degree of 'lost profit' is natural in any industry, but the statistics of software piracy are truly incredible, pointing to an almost total disregard of copyright laws that could go far beyond the problems suffered by the music and video industries. The fact that the computer industry is still in its formative years offers little consolation to the software companies who in the latest reported figures, 1990, lost an estimated \$4.46 billion (£3,000,000,000) in western Europe alone.

Software companies have tried many approaches to reduce 'lost sales'. Copy protection has ranged from the eccentric to the ingenious. Packaging and documentation has been improved to add to the 'feel' and value of the product. In 1984 the Federation Against Software Theft (FAST) was set up with the sole purpose of fighting software theft.

FAST is funded through industry and corporate membership. The European Leisure Software Protection Agency (ELSPA), another organisation concerned with piracy problems, is funded solely by software companies and is a member of FAST. Both organisations work together through advertising, promotion and investigation toward eliminating piracy.

The campaigning organisations are well aware of the need to educate computer users and have themselves come up against a lack of understanding of their activities. You may have heard of the events sometime ago leading to the break up of organised piracy in the Barrowlands area of Glasgow.

# Crime!

Similar raids took place in Leeds, where illegal software was openly on sale at market stalls. Amiga games formed the bulk of the illegal operation but there was also business and serious software for Amigas and PCs.

They were being openly sold off market stalls. Such a wanton breach of copyright was bound to attract the attention of the authorities, but when it did, police officers were unsure whether any crime had actually been committed. Only after referral to FAST, Trading Standards Officers and police chiefs did arrests take place, but the eventual action proved to be highly successful, resulting in prosecutions and seizure of a large

Blank disks are being bought in quantities of tens of thousands to meet the demand and it is believed that lorry loads of illegal software were being shipped in from Germany. Links with drug rings have even been suggested.

## swappers

It is not only the professionals who pose a danger. There are the "swappers" who also produce a substantial effect. It is estimated that ten - yes 10 - copies of each major game are pirated for every one sold. Even the future leaders of the country are involved. A member of the staff of

AUI was taking a course at which he met two teenage boys from a famous south of England Public School who boasted that they and others at the school all produced many copies of each game that anyone bought.

The software industry may scrape through this crisis with the emergence of relatively safe

storage media such as CD-ROM, but it is a feeble hope. New technology will bring CD duplication within reach of the piracy rings, or perhaps copied software on smart cards will be available at the local market for a few pounds. The only surefire way to

reduce large scale piracy is to increase legislation, increase public awareness and increase the resources of both FAST and the police. Heavy handed but possibly necessary measures.

Retailers are always the first to notice fluctuations in sales volumes and indeed several outlets have reported increased sales since the break up of organised piracy rings. It seems that most people will pay for software if they have to (look at the booming console market), although the old slogan 'software worth using is worth buying' certainly applies to the majority of sensible Amiga owners who would prefer to buy the software they want rather than steal the 'raw' product (i.e. a copied disk). Although it is thought that many of the original software companies in the Amiga

market have disappeared not because their software wasn't popular but because they sold too few copies due to illegal copying. So we all may suffer as companies who would bring us, as Amiga users benefit drop out of the market.

Computer gaming is now firmly established as a part of popular culture and one can only hope that as the industry matures, so do people's attitude towards computing and not just on the Amiga.

*Next month we take an in-depth look at the use and abuse of information technology AUI goes down the mean streets to find out just how close Big Brother is. Plus the ten all-time out-of-this world computer crime stories! You have been warned!*

**a**

Software companies are always trying new angles to make people buy their software. A certain PC software company recently advertised an 'amnesty', offering a software upgrade to users of the original, "no matter where or how you got it". Guilt inducing stuff from those clever marketing people.

'Serious business threat when management turn blind eye to software use'. It seems that software managers are having to tackle the large task of implementing policies on software use without much help from corporate management. It appears that some managers haven't even heard of software theft, let alone allowed for sufficient resources to combat it. Let's hope they get their act together, before they follow the likes of Mirror Group Newspapers who were prosecuted for copyright infringement shortly before the Maxwell debacle occurred and fined a substantial sum reputed to be over £50,000.

amount of equipment and disks.

The Glasgow raid netted about 10,000 disks consisting of roughly 90% Amiga software with an estimated value of £250,000. Other recent raids in Essex and Kinross in Scotland made further confiscations. In the Essex raid in Purfleet and Basildon - yes, the place which the Government regards as typical of its voters! - market stalls were found by police offers to have a thousand pirated disks worth over £25,000.

These raids only hint at the scale of the operation. The individuals at the helm of organised piracy are part of a massive operation, equipment including several Amiga computers estimated to be worth £150,000 was found at just one source, in a private house, which itself had been purchased from the proceeds of pirate software.





competition

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user port

# Under the

**Don't  
waste**

**bandwidth!**

**Philip Kelsey tells you  
what it means to  
venture into Netland.**

# NET

Date: Thu, 8 Nov 92 21:25:04  
From: dna@isn.isc.com \(\)\ (\saki\)\  
Message-Id: <9011081019.AA07887@pubs.isn.isc.com>  
To: phg@xxx.cam.ac.uk  
Sender: dna@isn.isc.com

NEWS NOTE --- Being for the Benefit of Newcomers to rec.music.beatles  
Revised 9/28/90

This is a modest compendium of most frequently asked questions that, every few months, seem to turn up in rec.music.beatles. More will be added in future editions, as the need warrants. This is not a substitute for honest, thorough scholarship on your part! Don't expect to become a Beatles Wizard right off the bat!

Other special lists are available for the asking: a book list---ask for BOOKS; clues to the all-in-fun "Paul is Dead" scheme --- ask for CLUES (and please don't take it seriously, folks); recommended pricing on Butcher covers and instructions for peeling --- ask for BUTCHER; and an introduction to the best Beatles "collectible" ie bootleg albums--- ask for RARE.

Corrections and emendations are, of course, welcome.

1) Is Paul really dead? what's the story behind the "Paul is dead" rumour?

It's merely that - a rumour. A series of disconnected facts was pieced together in the late 1960's (often pinpointed to 1969, sometimes 1972) by (as far as we can tell) a graduate student in the eastern United States (or, alternatively, a group of Beatles fans). These "facts" purported to reveal

A document automatically mailed to me upon my request. The net has a lot of similar features - archives, remote accesses, file transferring. You can waste a lot of time like this!

**I** imagine what it would be like to ask almost any question and have it answered within 24 hours. Or talk to a NASA employee about the latest military technology. Talk directly to the Commodore R&D programmers. Or simply chat about Peruvian folk dancing with a Norwegian Amiga-using Flamenco fan. Sounds interesting, doesn't it? And when you realise that having an Amiga makes it possible then it sounds incredible.

International communication like this has developed in the last twelve or so years, since the world's universities and research institutions started linking their

machines together into networks such as Internet, Usenet and Bitnet. Now it's got to the point that access to a modem, and a computer, and some PD comms software, means you can get into a 24 hour a day conversation spreading right across the technological world. (If you've nothing better to do!)

Despite there being an estimated 800,000 sites connected to the Net, and positively millions of users, a message will

travel the length of the system within a day or two. So if you have a problem on Monday, and a solution is known at all, anywhere, then the odds are that you can get it through the Net by Friday. And the

**I spent a year and a**

**quarter more or less**

**hanging on the Net**

**full-time**

Net even helps maintain Free Speech: during the attempted coup in the Soviet Union in 1991, when the Government imposed a ban on information going in or out of the USSR, the clamp-down was neatly evaded by dedicated Internetters.

## way of life

Confusing at first, Internetting gets exhilarating, even addictive. If you've used your Amiga to talk to local bulletin boards, you'll know what I mean, but Internet's strength comes from its incredible size. When I was at university I spent a year and a quarter more or less hanging on the Net full-time, dipping in and out of the 5,000 or more different newsgroups, and in that time I felt that I'd experienced something that was genuinely quite new to our time - it's never before been as easy to communicate to so many people in so many different societies.

There are smaller benefits. You can be famous; by posting enough opinionated, or useful, or intelligent messages you can acquire a name for yourself, becoming one of the loonies, the gurus or the vandals that give the Net its character.

## flame wars

As is suitable for such an underground phenomenon there is a Net language. To express disapproval with someone is to "flame" them. The big arguments that develop and overflow their newsgroups, flooding across the Net before they die out are therefore called

"Flame Wars". If someone is being pedantic, or boring, they are "wasting bandwidth". Your "sig" is the four or five lines filled with your name and Net address (and junk, or poetry, or thoughts that you feel the world needs to hear), that you write to go below each one of your postings. And doesn't everyone know what Smileys are? They don't?)

## you want it you got it

You have a computer (like your Amiga), so you need a modem and some communications software (like Ncomm), and that there are currently two avenues for you to carry on obsessive Internetting: Demon Internet Services, and CIX. Both cost, but, believe me, once you've got into it you'll willingly sell your grandmother for more time.

Speak to CIX on their Customer Care Line (0492 641961), or write to them at Suite 2, the Sanctuary, Oakhill Grove, Surbiton, Surrey KT6 6DU, but be aware that they aren't cheap. They charge £2.40/hour off peak and £3.60/hour peak time, with a minimum monthly charge of £6.00, plus a registration fee of £25. Add up what half an hour's use a day will cost on top of your normal phone bills and you could start feeling ill.

Demon Internet Services, on 081 349 0063 (42 Hendon Lane, Finchley, London N3 1TT), seems a slightly better bet to me. Their charges are more reasonable: £12.50 registration and £10 per month only; and their dedicated Internet access seems slightly less painful. **a**

From: francis@hanauma.Stanford.EDU (francis Muir)  
Newsgroups: rec.arts.books.soc.culture.british  
Subject: Master Ton in Short Pants  
Message-ID: helens.618  
Sender: news@helens.Stanford.EDU  
Wendy Cope (A Cup of Cocoa for Kingsley Amis. Faber & Faber) introduces herself to her readers with this condensed version of the Waste Land by Thomas Stearns Eliot.  
In April one seldom feels cheerful;  
Dry stones, sun and dust make me fearful;  
Clairvoyantes distress me,  
Computers depress me -  
Met Stetson and gave him an earful.  
She sat on a mighty fine chair,  
Sparks flew as she tidied her hair;  
She asks many questions,  
I make few suggestions -  
Bad as Albert and Lil - what a pair!  
The Thames runs, bones rattle, rats creep;  
Tiresias fancies a peep -  
A typist is laid,  
A record is played -  
Wei la la. After this it gets deep.  
A Phoenixian called Phlebas forgot  
About birds and his business - the lot.

"From the bowels of the Internet" It's not just confined to techno-talk - there's literature too...!



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test drive

# DIRECTORY OPUS 4.0

**Patrick Howlett test drives an upgrade of a legendary Amiga utility from Inovatronics.**



The new look Directory Opus, more colours and style

**D**irectory utilities have been popular with Amiga users since day one. even though the Workbench and Shell allow you to interface completely with AmigaDOS but it isn't always easy to do exactly what you want. Utilities were developed offering a more flexible way of handling AmigaDOS operations. Directory listings and files could be manipulated directly making for much easier transfer, deletion, renaming and so on. The popularity of this type of program has meant constant support from developers giving rise to a steady stream of increasingly powerful programs. And very welcome they are too. Directory Opus is well

established as the leading commercial directory utility program and having been in existence for three years has undergone several revisions and changes. Version 4.0 is the very latest and builds upon what was already an extremely capable program. If you've used a directory utility such as SID or CLImate then you will be familiar with the basic operations offered by Directory Opus.

The display has the usual 2 windows for directory listings with a bank of buttons at the bottom for selecting operations. Click on a drive button and the active window (shown by a highlighted bar) will display the root directory, click on a sub-directory and the listing will

change to show that sub-directory. Toggling between windows allows you to set up source and destination directories for copying and manipulating files between directories. Files are selected (highlighted) in the source (active) window using the mouse button and the destination directory is always the inactive window. Got all that?

Good, because now that I've explained the fundamental operation of the program we can start to look at its more powerful features.

## huge array

The program offers a huge array of operations and commands but its

basic function as a directory utility has been implemented extremely well. It buffers up to 30 directory listings (for double quick display) and can list buffers and devices as well as directories. Directory access is fast and as you work through sub-directories the order is remembered, so clicking on the path arrows allows you to cycle through the list of buffered sub-directories. This operation is slightly different to the previous version of DOpus where clicking the left path arrow simply moved down one level and clicking the right arrow move up a level, if it were available.

As with previous versions the directory listing can be scrolled in 4 directions using keys, sliders or the mouse. A new feature of V4.0 is Click-M-Click, which means click the mouse then move it and click again, quickly. In practice this is used for transferring the contents of one window to another although I'm sure there are other obscure uses for it.

## interrogation

A single click on a file highlights that file for possible manipulation, but a double-click will, if file is not a directory, result in Directory Opus examining the file as best it can, and it can do it very well! The program will interrogate the selected file to ascertain just what type of file it is, IFF pictures, anims, sound modules, samples, fonts, text and archives are all recognised, the program will then show the picture, play the sound module or animation and so on. If a file is not recognised by the DOpus then a hex and text output is displayed, although it's possible to add operations to DOpus to facilitate the handling of any type of file for which it does not cater.

The panel of buttons at the bottom of the screen provides the



file manipulation and processing operations. The panel is fully user configurable, so you can add functions, change their position or change the way they operate.

Some buttons have a second function accessed by the right mouse button and again this is fully user definable. I particularly liked the new-look dual purpose panel buttons, they have a small fold in the corner which indicates that a second function is available, very useful as a reminder! Several tiny buttons are used for the less frequently used operations. The four small buttons situated between the sliders are used to display (or clear) the currently stored buffers, enter a search pattern (or display a device list), read the root directory and request an Arexx command. And all from those 4 tiny buttons!

## options

The configuration options offered by Directory Opus are what makes it so special. Almost every aspect of the program can be changed by the user, allowing for a totally customised environment to be developed. So, starting with the default configuration it's possible to change not just the look of the program but its functions as well. For instance, if you don't like the way a picture fades in when you click the mouse button then change it!

The large buttons on the bottom panel can be positioned anywhere and be any colour whilst the drag bars and little buttons can be black or white, fat or thin! These are just some examples of the way in which DOpus can be customised and it's well worth exploiting all aspects of the configuration program since some impressive modifications are easily produced.

The functions of the panel buttons can be modified in several ways, each button corresponds to one or more commands and in addition flags can be set to control the processing of the command(s) and selected file(s).

As mentioned the whole look of the program can be altered and this is not purely for aesthetic reasons. Colour can be used to identify groups of related functions in the bottom panel or to differentiate between physical and virtual devices in the device list. The display can be half screen interlaced (if you so wish!) and the iconify function is useful for those who want the program instantly available.

## niggles

It's impossible to fully detail the features offered by this utility such is its attention to detail, so perhaps I

should just mention the few niggles that I have with before wholeheartedly recommending it.

It took me a while to work out how to change the horizontal dimensions of the directory windows (although this was the first time I had to consult the manual) and I was expecting to be able to use 1 or 3 directory windows with this version. I also found that, on occasion, it would fail to re-read a disk during manic disk swapping and editing sessions, even if I clicked the drive button. The only way round seemed to be to click on the path and press RETURN, not ideal but I suspect that I was using disks of the same name or doing something silly.

So there we have it, a brilliant program which can actually be made even better by the user. What more can we ask for? I had my doubts about whether all the features of DOpus 4.0 could be implemented without sacrificing speed and incurring too much overhead but the modular design of the program works excellently and even allows the user to access Opus functions from the shell.

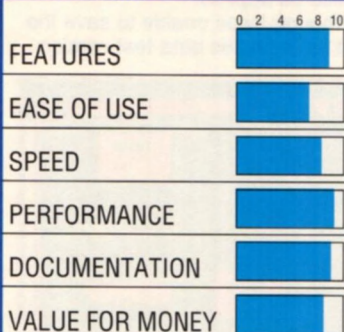
If you have a hard disk then Directory Opus 4.0 is almost essential and will pay for itself in terms of efficiency in a very short time. If you haven't a hard drive you can still use all the features of the program but you won't be getting the maximum benefit from it (but everybody knows that!).

And at this price it's an absolute bargain! **a**

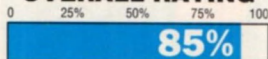
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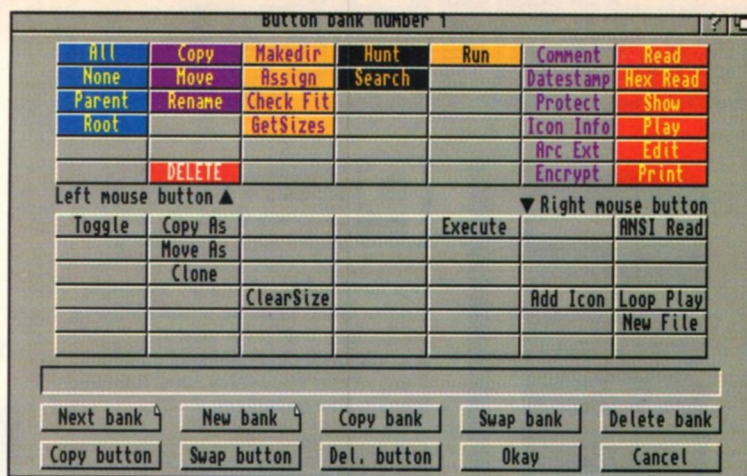
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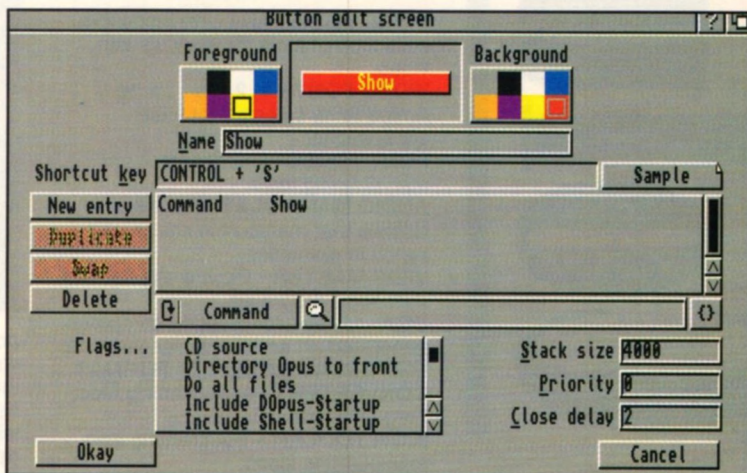
## OVERALL RATING



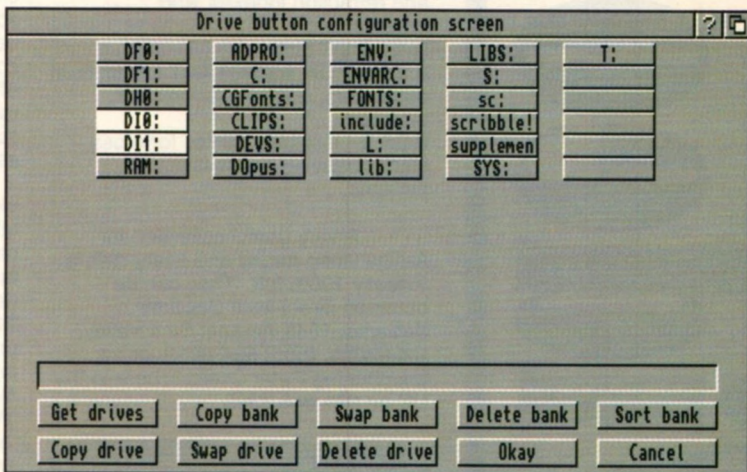
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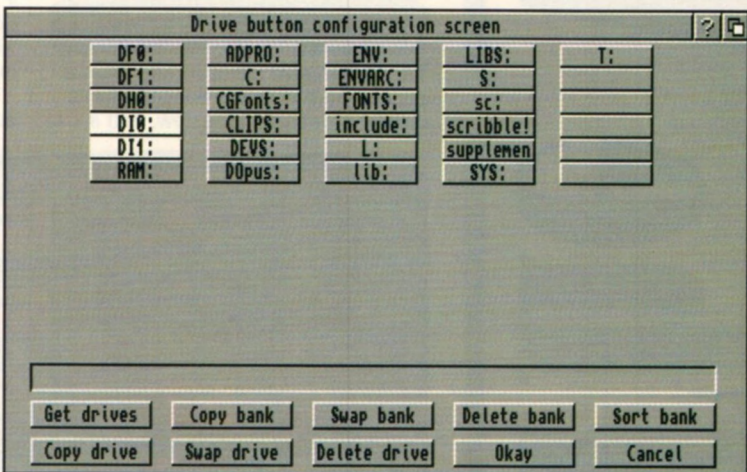
The button panel is easily modified to suit your need



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# IFF Not Now, When?



**How does your Amiga know music data info from fine art data when it all looks like garbage to you? Philip Kelsey reveals the secrets of the IFF.**

Long ago, back in the early days of the Amiga, Commodore asked Electronic Arts to come up with a standard for graphics files which could be used by any graphics program, and would therefore promote light and harmony throughout Amigaworld. EA obliged with Interchange File Format, today famous as IFF. Over the next few years IFF proved to be such a good idea that the idea was extended until there were standard ways of laying out animated graphics files, sampled music files, text files, or even files containing mixtures of all three media, and

nowadays there is no excuse for a program producing files that can be only be read by itself. In theory. The one problem that remains is to convince every company to use this standard - but that's another story.

The IFF is actually fairly simple, so let's plunge straight in. Figure 1 is a snapshot of the beginning of an IFF file, as it appears when laid out in a Hex editor. Figure 2 is a schematic of the contents of that file. In simple IFF files, which is all that we will be looking at here, there are four sections.

The first is simply the word "FORM". This identifies the file as a simple IFF file to any interested software.

The next comprises another longword, whose value is the length of the Form. In simple IFF files this is the length of the file in bytes minus 8. In more complicated IFF files - those holding both text and graphics, or graphics and music - this won't be true. In our example, whose file-length according to the CLI is 2874, the value is 00000b32, which translates to 2866.

The third section of the Form is another longword indicating which type of Form it is. In our case the Form contains graphics data, so the longword has the value "ILBM" (Interleaved Bitmap).

## chunking data

The final section to the Form is more complicated, consisting of a chain of data chunks, each, I'm afraid, having their own internal structure. This is the real meat of the file, and where the complexity comes in. A few of the more common data chunks are listed in Figure 2.

A chunk has 3 sections to it: a longword containing the type of the chunk; another longword holding its length in bytes; and the actual chunk data. One important thing to realise is that each type of chunk has its own format for this data section; so you need to think clearly about which types of chunk you are likely to want to interrogate before you write any code to do this.

Finally, here's just a fragment of C code from the NorthC IFF examples which defines the Chunk structures for anyone who's interested.

```
typedef struct {
    ID ckID;
    LONG ckSize;
} ChunkHeader;
```

```
typedef struct {
    ID ckID;
    LONG ckSize;
    UBYTE ckData[ 1 /*REALLY:
    ckSize*/ ];
} Chunk;
```

So that's the outline - the thing to do next is take a look at a couple of your own IFF graphics files and see what's going on. You will come across chunk headers that I haven't mentioned - that's because there are a lot of them, and they're always changing. Commodore keep a register of the more significant types of chunks, but programmers will keep on designing their own formats without letting anyone know. Which is just about where we came in. **a**

## getting at the iff

I can think of two places to look for real IFF-handling code: both the Examples disk of the NorthC PD C compiler and the disk that comes with Mark Smiddy's book Mastering AmigaDos 1 have C based IFF readers you could cannibalise as you wanted.

For any serious programming you need to get hold of a full definition of the IFF standard. This will tell you what goes in in any given chunk type: that, say, in the BMHD type of chunk the first four sections after the ID and the size are one word long, the next four sections are just single bytes, and so on. The best place to go is the Devices volume of the ROM Kernel Manuals, but other textbooks do have some details.



**Paul Overaa offers  
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simplifying your  
programming  
tasks...**

# TIPS

## PART 10

Last month I talked about black box functions and how they enable the programmer to produce code units that can be used without knowing how they work internally. It is possible to do a similar thing with data structures and this leads us into the world of something called the Abstract Data Type (ADT). Academics get quite excited about ADTs because by providing an interface that defines both a data structure definition and the operations which may be performed, it becomes possible to take the 'information hiding' philosophy one step further.

One often quoted example is a stack ADT which allows you to store and retrieve items in a last-in-first-out order using push/pop type stack operations. The underlying implementation for a stack ADT could actually be created using anything from an array or list-orientated arrangement, to a binary tree but to be honest the internal implementation details aren't important as far as the user-programs are concerned... they are working, conceptually, with a stack and that is all they need to know!

This hiding of the implementation details is one of the main advantages of the ADT approach. For a start it is possible to upgrade or otherwise change the ADT implementation without it affecting the existing code of the programs using it (all you need to do is bind/link the new ADT module to the relevant programs). In the literature you'll find in the main that ADT books deal, for obvious reasons, with generally useful structures Stacks, Queues, Deques, Trees, Graphs and so on. Often the textbook ideas will seem remote from everyday programming tricks but you can use exactly the same types of principles to solve more mundane problems. To prove it I've knocked up an example which, I hope, will illustrate the benefits.

The example I've chosen concerns the reading lines of text from a file. Now I know that reading through a text file line-by-line on its own is not too difficult... you open the file, read a line of text (probably using a standard library function), do something with the text, read the next line and so on. Supposing however that you have applications which require that you to move, on a line-by-line basis, backwards as well as forwards through the file and possibly do other things such as move to any specified line.

You could incorporate suitable routines directly into your applications program - but if you do that you will need to incorporate code for buffer opening, counting lines and identifying their start points, setting pointers to the beginnings of particular lines etc. You can build standardised routines for doing these things but why should your programs be forced to deal with that sort of detail when, from a conceptual

viewpoint, all they really want to do is to be able to specify a file and then access the N'th line, the next line, the last line etc? ADT

With the ADT approach they can. The secret is to package up, and hide, all the nitty-gritty implementation details and work instead with a nice tidy 'logical model' based on the use of a suitably defined data structure coupled to a small number of carefully selected access routines. The logical model in my example case arises quite naturally by virtue of the fact that we can regard ASCII text files as files which consist of one or more lines of text. As far as my model is concerned these lines come into identifiable existence by using a function called CreateTextLines() on a named textfile (this effectively opens the ADT). To complete my structure+access definition I also need to specify what operations can be performed on these 'textfiles'. I've chosen, somewhat arbitrarily, to allow the following four operations...

AskNumberOfLines()

GetNthTextLine()

GetNextTextLine()

GetLastTextLine()

The prototypes for the above functions, along with a KillTextLines() operation which closes the ADT, are shown in the header given in listing 1...(To be found on the CoverDisk)

Listing 1: The TEXTLINES interface header details

## two simple examples

I've built and compiled a suitable textline ADT module and, as might be expected, it is not necessary to know anything about its internal magic in order to use it - just include the ADT header in your programs and use the access routines as the prototypes indicate. You do need to get variable types correct and the easiest way to understand the types of arrangements needed is to see a couple of examples.

Let us suppose, for instance, that we want to open a text file and print line numbers followed by the contents of the respective lines. We need to open the ADT, get (and print) the first text line, and then sequentially collect (and print) each subsequent line that exists. Here's how it can be done using my textline functions in conjunction with a simple loop...

```
if (textline_p=CreateTextLines(argv[1]))
{
    /* ADT open */
    text_p=GetNthTextLine(textline_p,0);
    /* get first line */ do {

        printf("%d \t %s \n", line_number++, text_p);
        text_p=GetNextTextLine(textline_p); }
    while(text_p);
```

Similarly to read a file backwards we might adopt this type of scheme...

```
line_number=AskNumberOfLines(textline_p);
text_p=GetNthTextLine(textline_p,line_number); do
{

    printf("%d \t %s \n", line_number--, text_p);
    text_p=GetLastTextLine(textline_p); }
    while(text_p);
```

The examples loops themselves are trivial but the important point is that the ADT interface functions result in code schemes which, structurally, are directly related to our chosen text file model. If we place the above fragments (together with the appropriate ADT opening and closing function calls) into CLI/Shell programs which take a filename parameter from the command line it's easy enough to create runnable example programs. The first example, linetest1, displays a chosen text file with line numbers. The second example does the same thing backwards starting at the last line of the file. You'll find the C source, the compiled ADT textlines module, and executable program files on this month's cover disk. Remember that you will need to link the ADT module to your compiled code - Lattice/SAS C users for instance would need to use this sort of link-file...

```
FROM
LIB:c.o+"linetest1.o"+"textlines_ADT.o" TO
"linetest1"
LIB LIB:c.lib LIB:amiga.lib
```

My textline ADT does in fact have a surprising number of uses. Creating partial copies of files, writing print utilities that pause after N lines, setting up backward/forward scrollable textfile displays and so on. Get the hang of using the access functions from my examples and then modify them to tackle some different problems. I think that after a few trials you'll be pleasantly surprised by the results! **a**



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**Martin Witton reviews two books that take an interesting but generalist view of computing.**

**WHAT TO DO  
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LANDS ON YOUR  
DESK.  
GLYN MOODY AND  
MANEK DUBASH.  
Reed Publishing  
£9.95**

**Y**es, we know, you had no worries at all when you got your first computer. You were born with a knowledge of what to do when the first Guru showed up on your screen. But you would be surprised how many people still suffer from paralysing technofear and "don't even have an outside aerial for my TV!" as one quite senior

colleague said to me recently. This then would be the book to help.

The snappy titled handbook is a practical guide to help you get the most out of your micro-computer, advising on how to make the transition from typewriter to micro profitably and with minimum effort. (Even from no outside aerial!)

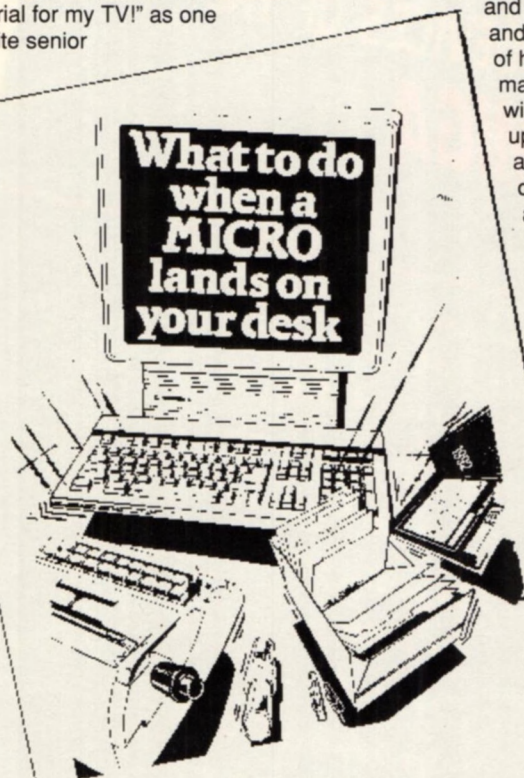
The authors have tried to avoid jargon, they say, although randomly opening the book I encountered "Modern LCD displays have good resolution and the latest techniques provide a high contrast ratio, although still not as high as the cathode ray tube...", so I suppose it depends what your interpretation of jargon is.

However the explanations of how they work and how they can be used to get the best effect is useful for technological beginners. The authors look at software - wordprocessing, databases,

spreadsheets, graphics and communications and the different types of hardware on the market. Although it will need to be updated to keep apace of developments (the authors should be referred to AUI's technology news pages) the book will be a handy reference guide, if not cover-to-cover bedtime reading (Surely you don't prefer Forum?!).

The Data Protection Act is included but there is not much mention of Commodore and nothing about the Amiga.

However as a general, non-machine specific guide it has its uses.



by Glyn Moody and Manek Dubash

# BOOKS

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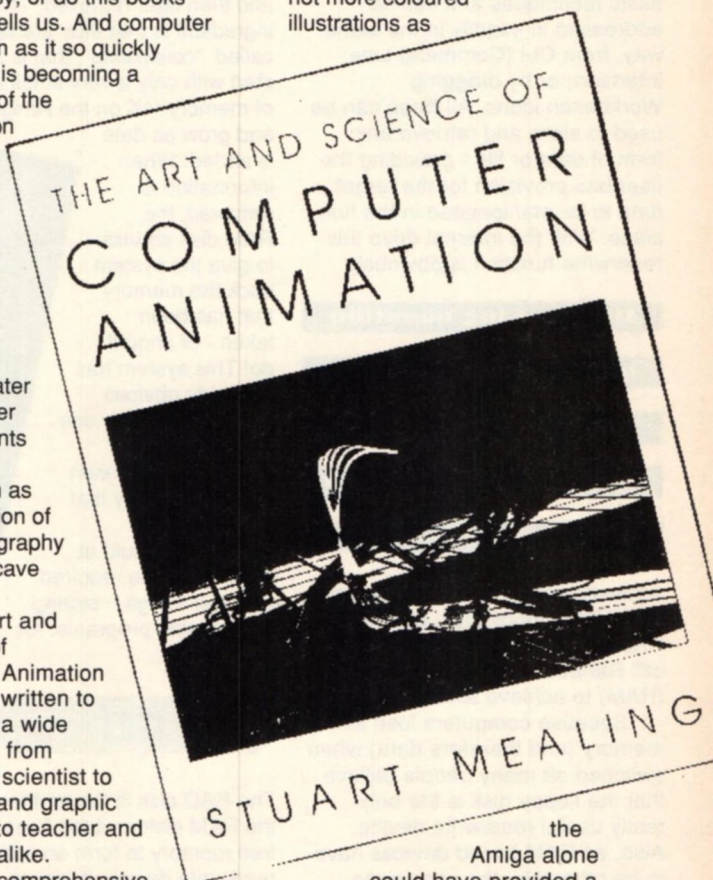
**A**s a discipline, computer animation represents the combination of art and science in the pursuit of realistic simulation, special effects and fantasy, or do this books correctly tells us. And computer animation as it so quickly advances is becoming a vital part of the presentation of a new form of reality. No, not just virtual reality but giving the computer artist as much greater control over the elements of his profession as the invention of say photography had over cave painting.

The Art and Science of computer Animation has been written to appeal to a wide audience, from computer scientist to the artist and graphic designer to teacher and beginner alike.

It is a comprehensive introduction to the specialised techniques and technology used in this field. The author provides an overview of computer animation, from basic principles, applications, hardware and software, to more esoteric developments such as virtual reality

and parametric modelling. In addition, a full glossary of terminology and a bibliography is provided.

It is a pity that there are not more coloured illustrations as



the Amiga alone could have provided a huge number of worthwhile inclusions. But no doubt the antiquated technology of printing on paper would have made it too expensive. It just shows you that computer animation is best described and illustrated on its home ground - the computer.



If you asked most Amiga users how many read/write "devices" their computer originally came supplied with, the answer would probably be: "One." This would almost certainly refer to the computer's own internal disk drive on the right hand side of the machine. The truth of the matter though is that most Amigas have twelve such devices (Fig.1). They are all handled in exactly the same manner as the disk drive(s) - with the exception of the printer ports which lack the facility for using directories.

The three most important devices for day to day data manipulation and system efficiency are: the diskdrive(s), the RAM disk and the optional RAD disk that is available only to those owners of Workbench 1.3 and beyond. Understanding a little about these devices is important if you want to get the best out of your system.

However different these three devices are, all employ the same basic techniques and can be addressed in exactly the same way, from CLI (Command Line interface) or by dragging Workbench icons. All three can be used to store and retrieve any form of data or file - providing the user has provision for the target data to be manipulated in the first place. With the internal drive this read/write function is obviously

The next big question

is, how much memory

do you have and how

memory hungry is your

target program?

achieved with a normal three and a half inch floppy disk, but the RAD and RAM disks use "roped off" Random Access Memory (RAM) to achieve similar results.

Because computers lose all memory (and therefore data) when switched off many people believe that the floppy disk is the only really useful read/write device. Also, as RAM based devices have to be primed by the user some Amiga owners have the mistaken belief that these devices merely add another stage to the computing process. But there are many advantages with them. both small and large, the key ones being "system efficiency" and "short term storage."

## **Peter Hayes takes a detailed look at** **"Ram" and "Rad" and how they can** **help streamline your system.**

### ram

The RAM Disk will be familiar to all users who load any version of Workbench, as this device is set up automatically. Without getting into technical details, the system creates a memory storage area for data or files which can be copied and then later retrieved. The magic ingredient is that they are what's called "collapsible", that is they start with only a very small amount of memory (4K on the Amiga) and grow as data is added. When information is removed, the RAM disk shrinks to give the system back the memory that has been taken - or should do! This system has two fairly obvious points: it can only use memory if it is available to be taken and the memory that the RAM disk confiscates could at some stage be required for other things - storing and running programs, for example.

### rad

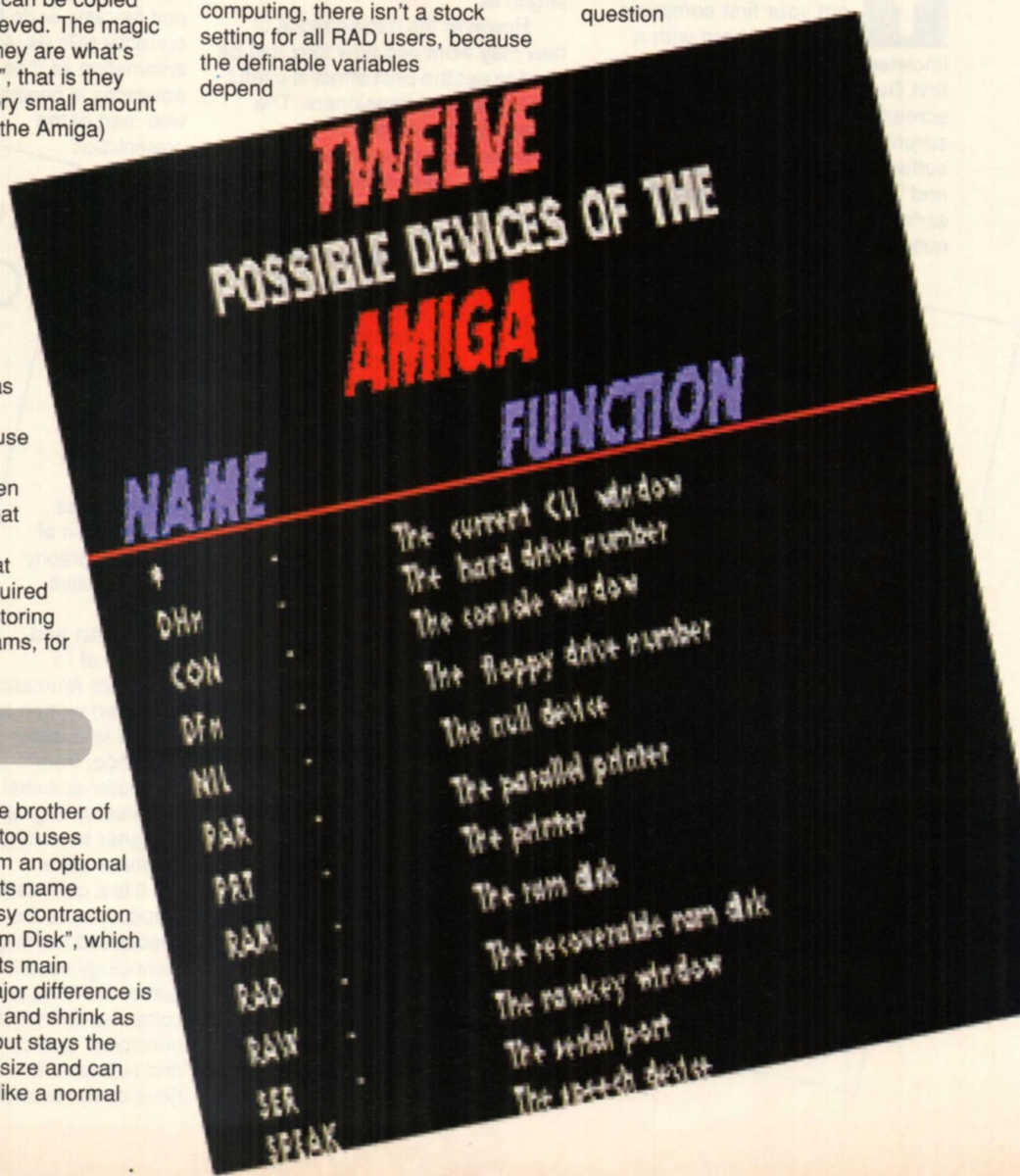
The RAD disk is the brother of the RAM disk as it too uses free memory to form an optional read/write device. Its name comes from a messy contraction of "Recoverable rAm Disk", which is a clue to one of its main advantage. The major difference is that it doesn't grow and shrink as does a RAM disk, but stays the same user defined size and can even be formatted like a normal

floppy disk. The other interesting fact is that it survives a Warm Reset - pressing the two Amiga keys and Ctrl - although its data disappears when the power is removed. This function is only available to those owners of Workbench 1.3 and above and is fully detailed in the user manuals.

Like so many things to do with computing, there isn't a stock setting for all RAD users, because the definable variables depend

very much on the amount of available memory and the type of program with which you wish to use it. However, simply typing in "Mount RAD:" (without the quotes and while in CLI) will give you a "stock" 242K RAD disk named RAMBO!

As most Workbench users have a choice of three key storage methods, the main question





# RETS

command which lets libraries stay in memory after they are first loaded.

With just one floppy drive available, the RAM disk becomes even more of a potent tool as it can help with the "disk swapping blues." I wouldn't recommend having just one drive, but copying files to the RAM disk (ready to be run later) and then placing your Workbench disk into the internal drive will speed things up - especially when

## crashes

No one admits that their programs crash, but plenty can - and at all the wrong times too. Once data enters RAD, it stays until the power is removed or the REMRAD command (remove the RAD disk from the system) is received in CLI. The sad fact of program crashes is that they not only bring down its own program, but the rest of the

# memory

is, which circumstances are appropriate to each method? Naturally, unless you're the sort that likes to leave your computer switched on permanently (some actually do!), you are going to have to find some safe resting place from your data come power down time. This has to be either a floppy or other storage device like a hard disk. The next big question is, how much memory do you have and how memory hungry is your target program?

## speeding up

The subject of computer memory is one for a full article in itself, but the matter is particularly pertinent to RAM based devices. Put very simply, the less memory you have, the more questions you have to ask yourself about the best use of these devices and if they can be used at all. For a fairly standard one Meg machine, priming a RAM disk with more than a few short pieces of data might lead to the program itself either to fail to load or even not to work particularly effectively. It might seem foolish to experienced users, but having a utility run out of memory on you is one of the most frustrating things in computing. Trial runs and a certain amount of educated guesswork are needed to deal with these problems.

Even with a much expanded Amiga another common problem, is when two (or more) Workbench programs will not multitask together. This is often because they both want "Chip RAM" (the memory that the specialist Amiga chips can access directly) and there isn't enough for both programs to have. Here the RAM disk can be put to good use by holding both programs (and optionally the associated data) to load down into active memory in turn. This can be achieved

surprisingly quickly and will also help the speeding up of your system as it doesn't have to manage two (or more) sets of "tasks" at the same time. It can at times be a way of dealing with two (or more) Workbench programs that don't multitask at all - although this really shouldn't happen.

Getting data into your RAM (or RAD) disk is very easy and simply means dragging the program icon into the open RAM disk window. If there isn't an icon, you can copy your program file to RAM disk via CLI (fig.2) or if you're a Workbench V.2 owner by asking to "make" an icon for the file by name.

## one drive

Sadly, some programs complicate things by using multi-support files and supplement this with the need for Workbench libraries. Although these libraries can be copied to RAM disk (they have to be reproduced under the same directories as a normal Workbench) you should really use the CLI's own "RESIDENT"

using "CLI heavy" applications.

One thing for any user to consider is the various disk "housekeeping" utilities that allow files to be copied en masse to RAM disk by means of the mouse. The public domain program "Diskmaster" is especially good, although there are plenty of others such as CLImate, SID or Directory Opus.

Most of what applies to a RAM disk also applies to a RAD disk too, in fact you need only to grasp the few differences rather than start again from scratch. Someone said recently, that the RAD disk is the best kept secret of the Amiga, but unless you have a memory extended Amiga (2 Megs at the very least) it must be used sparingly. RAD is a storage medium that can neither grow nor shrink once defined, but is extremely safe. The major advantage a RAD disk has over the RAM version is that it's both reset and crash proof, which is a comforting thought when you're exploring unknown waters.

### EXAMPLES OF COPYING FILES TO RAM OR RAD DISK VIA CLI

```
COPY filename to RAM:
COPY directory/ filename to RAM:
COPY filename to RAD:
COPY directory/ filename to RAD:
```

system working along with it - including the blessed RAM disk. The user has always to balance this advantage against the memory that it reserves for itself, with no real chance of taking it back. With a much extended Amiga this function can be used to almost the exclusion of RAM disk, unless you're doing something really heavy memory hungry like animation or DTP.

As an Amiga journalist, I sometimes have long working sessions in which both RAM and RAD disk systems are put to good use. Spurning the use of a hard drive, I tend to copy my Word Pro, Diskmaster and the target program I want to examine into either RAM or RAD disk - it all depends on how memory hungry my target program is. During my session I can have access to any of my three programs, without compromising either their efficiency by multitasking or running into the mentioned "chip memory" problem. If I'm using RAD, I can be sure that my ASCII text files are safe and sound, even if I crash out during my experiments. At the end of the session I can then save out any wanted data files to floppy for semi-permanent storage.

Both RAM and RAD disk were put on the Workbench for a purpose, and that was to make life quicker and easier for the user. If you haven't a hard disk to fall back on and you're not making full use of them, you should ask yourself, why not? With intelligent use of these devices you can get hard drive style advantages, without the expense of buying an actual hard drive. If only real life held such cost saving secrets! **a**



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*A brief demonstration of the 10 out of 10 English package in action.*



The games and menus are all mouse driven and easy to use.



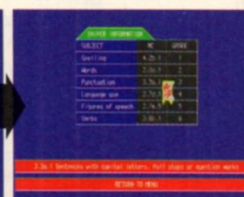
The Main menu: Start by selecting New Player.



Pete's achievement chart is now set-up.



The Game Menu - Pete is ready to learn!



Each game has its own achievement summary...



... and a high score table to add to the fun!

**THE 10 out of 10 SERIES** is an innovative collection of educational software. It covers traditionally accepted educational concepts and automatically records progress in a wide range of areas - all linked to the National Curriculum.

Children learn - and are assessed - by playing cleverly devised games, each with SIX grades allowing the child to progress at his or her own rate. Where appropriate, the achievement tables show the correlation of the grades to the

National Curriculum statements. You start by entering your child's name. This automatically creates his or her blank achievement chart - the program can hold up to 64 of these (ideal for the average class or a large family).

Moving the mouse pointer around a chart you can discover exactly what a child will learn by playing a particular game at any grade. The achievement charts are automatically updated to record progress as the the six compulsive games are played.



Sniper: Rearrange the words - with correct punctuation.



Cover Up: Match all the words with their opposites.



Word Fit: Fill the grid - but only use verbs!



Grab It!: There are plenty of collective nouns up for grabs!



Librarian: Sort the books, then match the adjectives.



Cheers: Discover the meaning of sayings.

**THE SIX CHALLENGING GAMES** in each 10 out of 10 package are designed to be played by a child alone, with friends or with you. Each game has six grades to cover a wide age range and include practise levels where appropriate - you can easily set many options to suit ability and taste too! You can even leave the child and return later to check progress.

Children work their way through the six grades of each game trying to turn the achievement chart green as they go. As an illustration, the screen shots

below show a middle grade of each of the six games in the English package - suitable for children at Key Stage 2 of the National Curriculum (age about 8 to 11 years).

Remember, all the games have five other levels and many features - such as graphics and speed - can be easily customised by parents or teachers. This flexibility makes 10 out of 10 English suitable for all ages and abilities from age six to sixteen.



Children can print a certificate of achievement...



... and they love to see their name on the high score table!



By pressing R you can see the aim of the game at a glance.



Each game has its own achievement summary.

**MOTIVATION & ASSESSMENT** are provided in two ways: an achievement chart displays academic results and high scores show gameplay. The former records progress as the games are played:

**RED** means help needed. **YELLOW** means practise needed. **GREEN** means 10 out of 10!

Now you can see where your child is not succeeding and use the various options to customise the games to help him or her progress more quickly. Children achieving 10 out of 10 in one or more grades can print a certificate - both on-screen and printed certificates are catered for. Children using the Early Essentials package are awarded stars too!

Pete's Achievement Record 10/10 English						
SUBJECT	Sniper	Cover Up	Word Fit	Grab It!	Librarian	Cheers
Spelling	4.7b.1	4.5.5a	4.5.6b	2.7c.2	2.7c.1	3.7b.2
Punctuation	3.3a.1			3.6b.2		3.7b.2
Nouns		3.3a.6	2.5e.3	3.4d.3	4.2c.2	
Verbs	3.8c.1		3.3a.1			3.3a.1
Adjectives		2.1b.1			3.4e.2	3.3a.1
Language use	2.7d.1	2.8e.1		2.7c.3		3.3a.1
Words	2.2a.1		4.2c.1	3.7c.4		2.5e.1
Pairs		4.3c.1	4.3c.2		3.7c.4	
Sound patterns		2.2e.2	2.5e.3		2.3d.3	3.8c.9
Figures of speech	2.7e.5			2.2f.1	2.7e.2	
3.3e.8 Simple use of past tense						
RETURN TO MENU						

The achievement chart shows progress. By moving the pointer you can view a layman's interpretation of Curriculum numbers.

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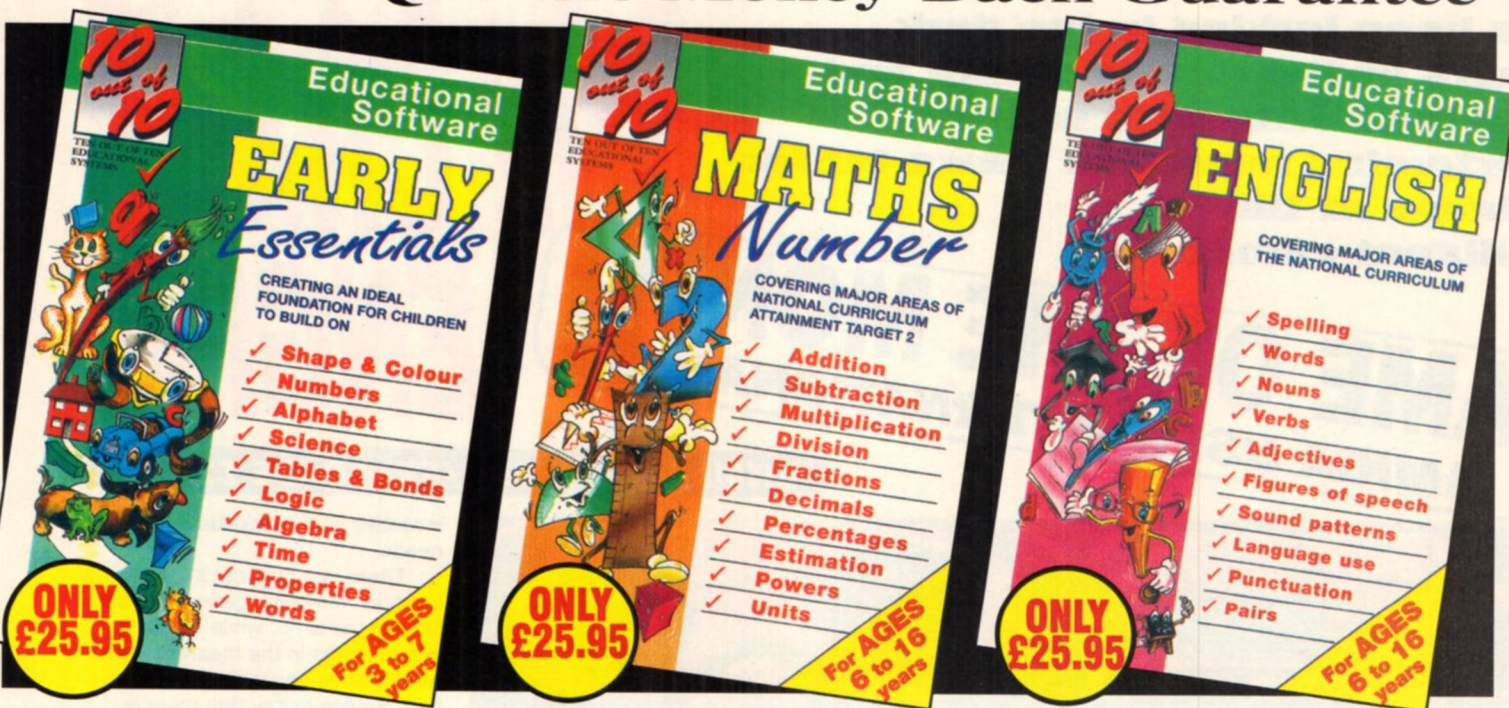
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### Early Essentials

For Children Under 7 Years

Subject Areas Covered	
<b>Gnasher</b>	Gr1 Recognise simple shapes and colours Gr2 Learn the order of the numbers 1 to 10 Gr3 Learn the alphabet - with pictorial clues Gr4 Simple sequences including odd and even numbers Gr5 Discover properties of common objects Gr6 Experiment with numbers and operations
<b>Link Up</b>	Gr1 Match and link shapes and colours Gr2 Learn to count up to ten Gr3 Recognise the link between upper and lower case Gr4 Link two shapes to composite pattern Gr5 Match analogue to digital clocks Gr6 Know a selection of simple words
<b>Artist</b>	Gr1 Colour and coordinate skills Gr2 Counting with colours Gr3 Number stories with coloured rods Gr4 Following rules to recognise shapes Gr5 Pattern and symmetry through shape and colour Gr6 Beginning a basic science vocabulary
<b>Racer</b>	Gr1 Check shape and colour knowledge Gr2 Reading simple alpha-numeric look-up tables Gr3 Improving reading/vocabulary Gr4 Recognising characteristics (size + shape + colour) Gr5 Reading and understanding two-way tables Gr6 Identifying scientific diagrams
<b>Stones</b>	Gr1 Understanding number conservation Gr2 Stepping through the alphabet Gr3 Patterns of growing and shrinking shapes Gr4 Learning to tell the time Gr5 Practising number skills Gr6 Using common sense to follow a sequence
<b>Science</b>	Gr1 Understand the meaning of push and pull Gr2 Following letters in alphabetical order Gr3 Associating words and pictures Gr4 Elementary algebra - "find a number" problems Gr5 Knowledge of everyday items Gr6 Accurate and rapid time recognition

### Maths (Number)

For Children 6 to 16 Years

Levels of Attainment Target 2 Covered	
<b>Carnival</b>	Gr1 2a.1 Know and use addition facts up to 10 Gr2 3c.2 Understand remainders in a calculation Gr3 4a.2 Multiplication facts up to 10 x 10 Gr4 5b.2 Calculate percentages of quantities Gr5 6a.5 Relate equivalent fractions to decimals Gr6 8c.1 Use of estimation to check size of answers
<b>Cover Up</b>	Gr1 3a.4 Know and use subtraction facts up to 20 Gr2 3b.1 Multiplication facts up to 5 x 5 Gr3 4a.4 Mental addition of 2 two-digit numbers Gr4 4a.10 Division of two-digit nos. by single digits Gr5 6a.4 Using equivalence of fractions (and ratios) Gr6 6a.10 Convert fractions to percentages
<b>The Big Bang</b>	Gr1 2a.2 Know and use addition facts up to 10 Gr2 3a.2 Know and use addition facts up to 20 Gr3 3a.3 Multiplication of single-digit powers of 10 Gr4 5a.4 Mental division of single-digit powers of 10 Gr5 6a.9 Percentage changes Gr6 6a.9 Convert fractions to decimals
<b>Grab It!</b>	Gr1 3e.1 Use decimal notation with money Gr2 3b.2 Know and use the 2, 5 and 10 times tables Gr3 4a.5 Mental subtraction of 2 two-digit numbers Gr4 4a.6 Mental subtraction of several single-digit numbers Gr5 6b.1 Estimate multiplication and division Gr6 7a.2 Division of multiples of powers of 10
<b>Silicon Brain</b>	Gr1 2b.2 Find the difference between numbers Gr2 3a.3 Use a wide range of metric units Gr3 5b.1 Calculate fractions of quantities Gr4 4a.4 Multiplication and division problems Gr5 7b.3 Use memory and brackets on calculator Gr6 6a.1 Standard form (integral powers of 10)
<b>Cheers</b>	Gr1 2b.1 Whole number add and subtract problems Gr2 3d.2 Make estimates based on familiar units Gr3 4a.4 Solve multiplication and division problems Gr4 5a.1 Imperial units in daily use Gr5 6a.4 Use index notation Gr6 8b.2 Four rules of fractions

### English

For Children 6 to 16 Years

Attainment Targets and Levels Covered	
<b>Sniper</b>	Gr1 4.2b.1 Simple monosyllabic words Gr2 2.2a.1 Read & understand Signs, Labels Notices Gr3 3.3a.1 Capital letters full stops and question marks Gr4 2.7a.1 Retrieve information (Abbreviations etc.) Gr5 2.7a.5 Literary devices (Proverbs) Gr6 3.8c.1 Grammatical constructions (Passive Tense)
<b>Cover Up</b>	Gr1 2.1b.1 Recognise simple words (adjectives) Gr2 2.2a.2 Respond to poems (rhyming words) Gr3 3.3a.6 Masculine to feminine nouns Gr4 4.3c.1 Awareness of word relationships (opposites) Gr5 4.5a.5a Spell words of greater complexity Gr6 2.8a.1 Lang. change over time
<b>Word Fit</b>	Gr1 4.2c.1 Spelling patterns (blends) Gr2 4.3c.2 Awareness of word relationships (synonyms) Gr3 3.3a.1 Sentence structure Gr4 2.5a.3 Awareness of choice of words Gr5 2.5a.3 Unconventional spellings Gr6 4.5.6b Common misspellings
<b>Grab It</b>	Gr1 2.2f.1 Read a range of simple material Gr2 2.2c.2 Phonics cues in reading Gr3 3.4b.3 Structures of English (Collective nouns) Gr4 3.8b.2 Use of the Apostrophe Gr5 2.7c.3 Choose vocabulary Gr6 3.7c.4 Lexical features
<b>Librarian</b>	Gr1 2.2c.1 Use initial letters to recognise words Gr2 3.2c.2 Spell a wider range of words (plurals) Gr3 3.3a.3 Appreciate links between words and sounds Gr4 3.4a.2 Revise & re-draft writing (descriptive words) Gr5 2.7a.2 Use of literary devices - Similes Gr6 3.7c.4 Choose a wide vocabulary
<b>Cheers</b>	Gr1 3.3a.6 Check for consistent use of comparatives Gr2 3.3a.6 Simple use of past tense Gr3 2.5a.1 Word play Gr4 2.7a.2 Use and misuse of colloquialisms Gr5 2.7a.2 More complex punctuation Gr6 3.8c.9 Poetical constructions

**Before you buy ANY educational software ASK these questions:**

- Is it designed and developed in **BRITAIN** and directly linked to the **NATIONAL CURRICULUM**?
- Has it been designed to use the **POWER** of your 16 or 32-bit computer and not just converted from an existing 8-bit product?
- Does it **MOTIVATE** and **REWARD** the children?
- Is children's progress constantly **MONITORED** and **RECORDED**?
- Can it be **CUSTOMISED** to meet your child's needs?
- Do parents and teachers agree on its **QUALITY**?
- Will it **EDUCATE** your child now but also have sufficient **FLEXIBILITY** to last for several years without the need to purchase the next level?
- Are the producers **CONFIDENT** enough in its quality to let you test it yourself **FREE** - at home or in school?
- Does it **CHALLENGE** more able students but also have levels for beginners?
- Are there **CLEAR** and **OBLIVIOUS** educational objectives?

**If any answer is no, it's not 10 out of 10!**

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# entertainment

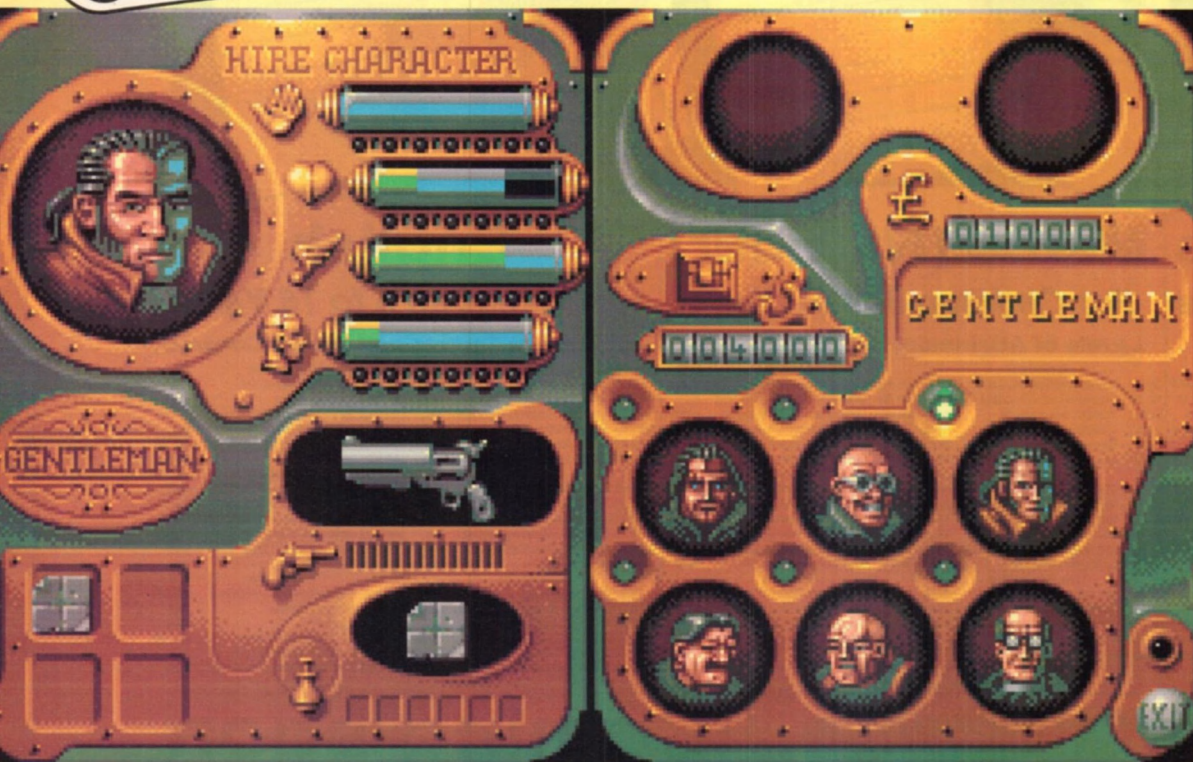
# now!

## THE CHAOS ENGINE

**Ashley Cotter-Cairns and Andy Moss have been lurking in the dark corners of the games scene and come back with with some entertaining news and views for the guidance of the intelligent gamer.**

**GAME OF THE MONTH**  
AMIGA USER INTERNATIONAL

**BITMAP BROTHERS/RENEGADE £25.99**



**T**his is one of the most eagerly awaited games for a long, long time. The Bitmap Brothers have been pretty quiet of late, but that's because, they claim, they have been putting all the hours that God sends into this project: The Chaos Engine.

Unlike other shoot-them-till-they-drop games, this is set against a weird semi-Victorian backdrop. But, it does still involve large amounts of gratuitous violence, loads of bonus weapons, big explosions, enough enemies to make a Super Nintendo owner shake in his boots and plenty of graphics featuring men in tough-looking tight, ripped leather

clothing. (Are these Bitmap self portraits?)

So it's fairly run-of-the-mill in that respect - the game not the portraits.

But no! To confine Chaos Engine to the stockpile of arcade shooting games would be as unfair as labelling Tory economic policy as effective or washing powder advertisements as exciting. It takes a lot of aspects from the other Bitmap games, mixes them all about and the result is something extraordinary.

In common with such games as Speedball 2, two human players may take part in the slaughter. The alternative, refreshingly, is to team up with a

computer ally, who will then join you in the cause. Of course, things are never as crystal clear as that, especially where Bitmap games are concerned. What if a player decides that he is going to laze around and steal all of the bonuses, while the other player has to kill everything?

Well, Chaos Engine has to be unique in that it actually encourages the players to take advantage of one another. A meter at the end of each level shows how many of the enemy were killed, how much of the bonus points were collected and then shares out an extra bonus to the winner of this statistical encounter. There's all of the

incentive your 'backside' player needs.

There is a plot, but it mainly involves activating generators and leaving the level, while shooting lots of things in the meantime, so I won't bother you with details like that. Suffice to say that there is ultimately someone very mean behind all of this, someone who, if left to his own devices, would probably take over the world and turn us all into Sun readers (gulp).

Graphics are up to the usual brilliant Bitmap standard, in fact better than any of the duo's other games to date. Smoothly animated and full of character for sure, with excellent scrolling and some nice effects to boot. But it's not only the in-game attention to detail which impresses - the static screens are very busy and well-drawn, really giving the game some atmosphere. Sound, too, is superlative, featuring a driving soundtrack behind the action and lots of the usual explosions and screams.

But it's the addiction which will finally win you over. From the moment you start pummeling the foe, the game will reach out and grab you with iron fingers and it won't let go. It must be something about the unique combination of factors involved in The Chaos Engine, but whatever it's got, I hope to see more of in future games of this ilk. Superb.

### VERDICT

<b>Graphics:</b>	<b>94%</b>
<b>Sound:</b>	<b>89%</b>
<b>Game Play:</b>	<b>96%</b>
<b>Decision:</b>	<b>92%</b>



# VIDEO KID



**RATING**

**68%**

**GREMLIN/GBH £9.99**

Video Kid is a shoot em up with a very unusual flavour. You play a video-mad teenager with a bit of a problem - you've gone and trapped yourself inside your VCR and now have to fight your way out. Problems are mainly caused by the fact that you can't fly out of the 'camera shot' and that the movement of this is beyond your control, as the screen scrolls in a

set pattern.

Video Kid is quite cute, as are his opponents. The sounds are pretty average, while gameplay has been purposely made tough to keep the long-term challenge high. Although it's not the best of games these days, even at this price point, it may provide a distraction for jaded (or broke!) arcade games fans.

## CRYSTAL KINGDOM DIZZY

**CODEMASTERS £19.99**

Codemasters comes in at a mid-price of twenty sovs, which presumably saves you enough to buy one of their true budget games afterwards. Crystal Kingdom picks up, drops and solves puzzles where all of the other Dizzy games left off. It's another arcade puzzle adventure, with squillions of locations to find, fruit to collect and eggy characters to 'interact' with.

There is a marked difference, apart from the price, over other recent Dizzy games. It's all a lot slicker, better presented and smoother, with tender loving care oozing from every aspect. That



said, it's still the same old Dizzy format.

**RATING**

**75%**

## NEWS

# IMPRESSIONS OF WAR

When Two Worlds War is the latest in a string of massive strategy titles from Impressions. Set in the year 2121, you are in command of an advanced war workstation. Why is this so advanced? Well, for one thing you can design new weaponry to blow the socks off your enemies, program them fully to wipe out the preset civilisations - or redesign them if their screams of agony get boring.

I'm sure that your local software supplier will give you some old tosh about the game being on order if you go and ask him for it now. But it should be gracing your small screens in time for May or June.

## PELE'S FINAL ACCOLADE

Accolade Software has signed up two noted stars of the sports world. The most famous of these is Pele. The legendary hero of every Brazilian schoolboy soccer player finally makes it to the world of computer games, with an as-yet unnamed title bearing, one presumes, his name and, one presumes again, based on the perennial fave soccer. As to when you'll be able to get hold of a copy, that's anyone's guess.

The other world-famous star is Brett Hull. Who? Well, you've got me. But he is, apparently, "the most marketable ice hockey player since Wayne Gretzky". Well, I remember Gretzky Hockey 2 and it was about as marketable as second-hand toilet roll. Americans might disagree, but I doubt that Brett will ever skate onto the Amiga scene.

Accolade's also won a moral victory in that most strange of worlds, the law courts. It's all something to do with Sega software licences and whether or not Accolade can produce games for the consoles. I ask you, is it really worth all of the hassle? Three years from now, Sega probably won't even be around anyway...If consoles disappeared once they can again...



# 'BAT II is a daunting task'

# BAT II

Ubisoft 1 Meg £34.95



effect it presents. When you move from one location to another, the screen splits into two, showing your new location and the old one. This further splits into a maximum of four separate locations, which is useful for seeing what is going on in different parts of the world at the same time.

When you engage a

character in dialogue, a menu of subjects appears one of which needs to be highlighted. If I had a criticism here, it would be that this is a very limited system, and does not allow for as much interaction as you would have through typing sentences. But, the only reason for conversation in BAT is to reveal information on either locations or characters, to enable you to move to new areas, so an in depth chat is unnecessary.

The game structure is based on a 'distributed adventure', where you can arrive at the same solution by different paths. The paths can be parallel or concurrent, and converge at certain junctions that

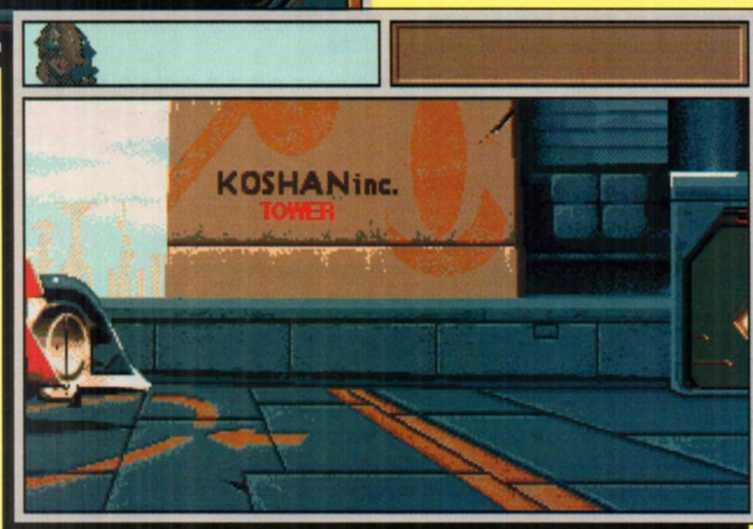
**N**ot only have you a pretty tough adventure to crack, but also there is some heavyweight programming to be done getting your built-in computer BOB, to work properly, but more about that later. There is a game world some five times bigger than BAT I to explore, four flight simulators, over a thousand objects, three in built video games to play, and over two hundred intelligent beings to interact with. Daunting it is. A let down it is not.

I remember well, how excited I got over BAT I, the true originality of it, the graphics, the sound... well, this time round the playing system has been completely refined to allow you to plunge into the world of BAT without feeling restraints in any way.



First things first though, for the benefit of those who missed out first time round, BAT is a graphic adventure that involves no keyboard input. Instead it has an intelligent cursor that forms different icon shapes depending on where on the screen scene you point it. For instance an arrow shape will denote a possible exit, a face will denote that a conversation can take place, a credit card shape means that you can buy something etc.

Also, a unique function of BAT is the 'windowing'



**"The playing system has been completely refined to allow you to plunge into the world of BAT without feeling restraints in any way."**



logically will lead to the next part of the adventure. This system combined with the computer characters which are animated and come and go, gives the whole game a live comic book feel.

At the beginning of the

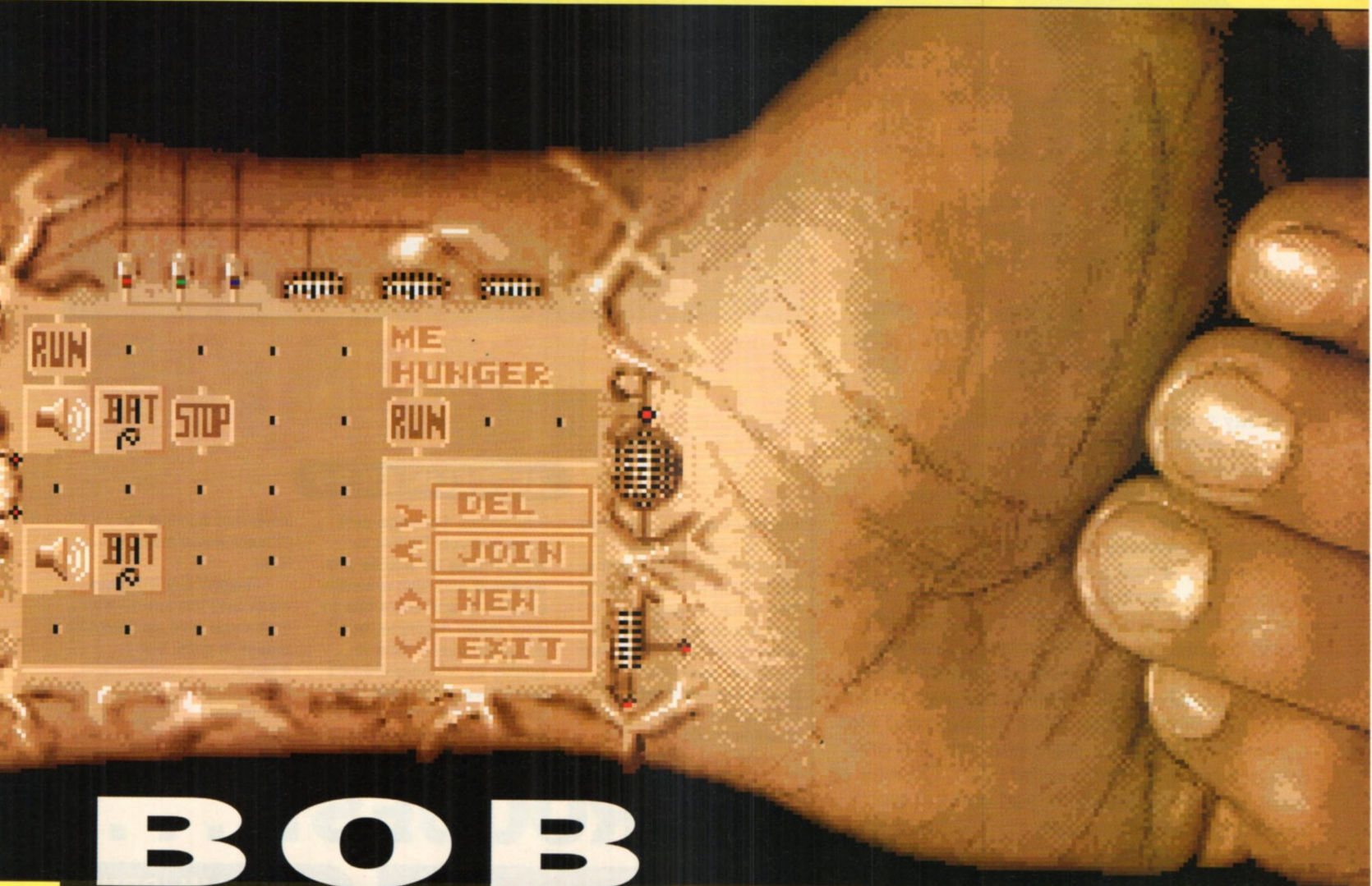
game, you have to meet Sylvia Hadford, a fellow agent, who is residing at the local hotel. Once you arrive there, she explains that your mission is to remove ownership of the Bedhin mines from a warring race called the

Koshan by obtaining as many unused property titles of the mines as you can find to claim ownership by majority.

The mines produce Echiatone 21, a priceless commodity that is needed to keep Shedishan alive.

Each one is a different simulator, and uses different commands, so practice here is essential.

There are also three arcade games to play within BAT to allow you to win or lose money, ranging



# BOB

Where BAT II really begins to get complicated is finding how to get BOB working properly. BOB stands for Bidirectional Organic Bioputer, which every BAT agent has implanted in their left arm!

It monitors and analyses your agents bodily functions, as well as providing priceless support in many other areas like translating alien languages, warning of imminent danger, night vision, healing powers and even changing your features letting you move about unrecognised!

BOB is an essential tool, no question. The problem is that each function that you want to use has to be written as a computer program in BOB's special language called 'Parallel Token'. This language is entirely graphical in nature and consists of icons and lines, created on a 18\*12 block worksheet.

There are basic programs to create like 'tell me when I'm hungry', or 'tell me when I am tired' etc, and there are advanced programming techniques to master which consist of If Then and DO statements running consecutively. In fact you can run up to five programs at any one time. As you can gather by all this, it is time consuming and has little to do with the story at hand. Moreover, it becomes terribly frustrating when programming errors occur and are only highlighted one by one. You fix one only to find another and then another. AAAGH!

Why could'nt they just write a simple set of commands for BOB?

These titles are held by various key characters throughout the city, who unsurprisingly are being hunted by the Koshan.

You will have your work cut out though, as this is just the strat because built into the story are two additional adventures that will become clearer as the game goes on..

The game has a number of transportation vehicles to use which can be piloted automatically, but are much more fun if you take them on yourself.

from a breakout type game to chinese checkers.

New adventurers should steer well clear of BAT II, as it's all too much to take in. However, experienced gamers will love it and drool over it for many a month.

## VERDICT

Graphics:	95%
Sound:	90%
Game Play:	90%
Decision:	92%



NEWS

# WARE'S THE HOUSE?

One day soon you may be bundling into the car and driving to a warehouse to buy your computer games. That's because of the foresight of Costco, a firm which believes that there is a place for bulk buy, bulk sell computer hardware and software.

The idea is that a dealer or consumer signs up for membership and that the company then sells the stuff at as near as damn to cost. Its profits are largely derived from the membership fees, so expect to find them expensive. But if you're halfway to the front door with cheque book in one hand and car keys in the other, wait, because the only one around is in Manchester. Boo. Oh well, at least like DIY enthusiasts you can get wet while spending your cash.



## Souped Up I.C.E.

In our last issue we welcomed back to the games scene one of its most notable characters – the legendary Stuart Bell, now of the interestingly named I.C.E. Software Company. Stuart was the one man most responsible for building Microprose into a European power – and snapping up BT's entertainment software company, Telecomsoft. Last issue we omitted the name of I.C.E.'s hot new game Abandoned Places 2. Andy Moss finds it a top class product and we hear from the retail trade that it is a hot selling product. Programmed by the cream of Hungarian coders for I.C.E. we're trying to persuade Stuart Bell to include a plate of Hungarian goulash with AB3. That should make a splash!



# CARNAGE

**ZEPELIN £9.99**

Another budget game from the big balloon company. This time it's a stab at the old favourite, Super Sprint. The action is viewed from above a race circuit, upon which four of the smallest cars ever seen are destined to contest a ludicrously tough championship.

Like just about all of its

influences, Carnage gets progressively harder to play. Points for places are awarded and also a wedge of cash to add extra bits to your mean machine, but if a human player fails to qualify by winning then it's game over. However, the game bravely attempts to get as many as four people playing at once, with

keyboard options for players three and four. Nice.

Graphically it's quite weak and the sound won't make you give up your CD player in glee, but it could entertain a few friends one wet weekend.

**65%**

# HEROQUEST...



**GREMLIN/GBH  
£9.99**

This is a firm favourite of mine from years gone by. It's an adaptation for the Amiga of the very popular board game of the same name. It's very accurate, which is not always such a good thing - board games have lots of limitations which computer games don't suffer from.

Even so, it's a bit of a bargain at this price. It has plenty of lasting appeal, with lots of quests to complete. Graphics are the better side of adequate, with some nice characters but poor animation, while sound is very limited with only the odd spot effect.

HeroQuest won't appeal to all tastes, but it is fun for a while and may pick holes in the justice of certain games being charged at full price.



# CHUCK ROCK

## SON OF CHUCK



Now the successful owner of Chuck Motors, Chuck Rock has been kidnapped by his arch rival in business, Brick Jagger, the shady boss of the Datstone Car Company. Following the arrival of the ransom slab, Ophelia cries as she reads the list of demands to secure Chuck's release. Six month old Chuck Jnr. breaks out of his playpen vowing "I'll be back - with my dad!"

Join Chuck Jnr. on 6 levels of prehistoric combat as he battles through volcanoes, mountains, jungles and caves. Tackle dinosaurs, snakes, elephants, grizzly bears, monkeys, tigers and turtles on your way to the final confrontation - the showdown at the Datstone Car Company to rescue the kidnapped Chuck Rock!

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## DISCOVERY IN THE STEPS OF COLUMBUS

**Impressions**  
**£29.99**

In true adventure spirit DISCOVERY lets you discover and explore six complete New Worlds the way good ol' Columbus did the business way back when.

Build ships, and sail them off into uncharted waters to find land. And when you do, build a settlement, clear forests, grow crops and mine minerals and send them back home for a tidy profit. But that's not all, send out expeditions to discover great landmarks and lost civilizations and ultimately defeat your four other computer controlled players.

The game is entirely mouse driven, and highly automated, although you can intervene and direct your progress and then watch it happen. It's a sort of SIM CITY meets CIVILIZATION but with lots more going on at the same time. The game includes six huge worlds, populations, empire building ancient and physical maps of each world, eight types of ship, land and sea battles, mutiny and pirates.

The graphics are well presented if a little juvenile by Amiga standards these days and I felt the gameplay a shade too fussy for its own good. Impressions are doing good things and I loved Caesar, but Columbus is no match for it. It's a case of subject matter being too big a task for the program. But a good try at a difficult task though.

**67%**

**now!**

# NEWS

## MINDSCAPE'S RED HERRING

Not so much a game as a computer phenomena, is the billing for this Fish sim. If the thought of being a smelly cod leaves you cold, EL FISH is all about creating your very own fish environment. Each electronic fish you create has a genetic code that controls how it looks and behaves, and you can interbreed to form new life forms etc. Fins ain't what they used to be, eh??

## CAPTIVATING AGAIN

Also from Mindscape comes the long awaited sequel to Captive, created once again by Tony Crowther. Get this. There are over 1000 buildings to explore in each city, but there are over 4000 cities! Playing the role of Trill from Captive 1, you control four droids in a mission to free imprisoned hostages. How many years have you got to spare to play the game through to the end?

## OH NO MORE HUMANS!

I flippantly said in my review of HUMANS that no doubt we will get more levels, and more we are getting. The JURRASIC LEVELS have more dinosaurs, more enemy tribes and even rougher terrains. Not for the faint hearted.

## GRRRR ROAR MEOW!

Recently we saw a private viewing of Atari's latest toy, the Jaguar. After all of the fuss surrounding the now near-silent Falcon, can the Jaguar give Atari a much-needed injection of support? Not in this writer's opinion. Mr Tramiel was probably as confident as ever about the machine's chances, but I hear that Mickey Mouse wears an Atari wristwatch... Now, when will we see an AMIGA console?

And if you've got a portable Amiga - please can I have one? - don't take it on board an aircraft. The International Air Transport Association is considering a ban on all handheld computer games on airplanes.

The air safety watchdog people say that the games may interfere with air traffic control radio signals. A letter has been written recommending a ban on such electronic devices at key times such as take off, taxiing and landing during the flight. They didn't mention the Amiga and seem to feel that the consoles are largely to blame for any problems.

Personally, we'd say that a ban on the nasty little things in all public, sorry public, places might be a good idea. Seeing grown men playing with themselves, and their juvenile devices, on the Tube or in trains says something, and it's not very complimentary, about the way our western civilization is moving.

## THE BARDS TALE CONSTRUCTION SET

**Interplay**  
**1 Meg**  
**£29.99**

The Bards Tale was at one time my favourite role player. It broke new adventuring ground and had a kind of character to it that up until then just wasn't around. Bard was easy to get into, yet contained a wealth of role playing adventure fun.

They only ever made three in the series, and those three are indeed classics of our time. What better way then to introduce new converts to the Bard legend than to bring out your very own construction set and let you create your own RPG's using the

brilliant Bard system?

Everything is accessible, you have the power and flexibility to design your own world, and to help, Interplay have included many default settings in order to maintain a good balance. But you can change what ever you

wish, and even put 99 MegaOrcs with 20d100 hit points into a room, but that would be suicide!

The manual is clear and concise, and there is even a sample dungeon ready made for you.

**90%**



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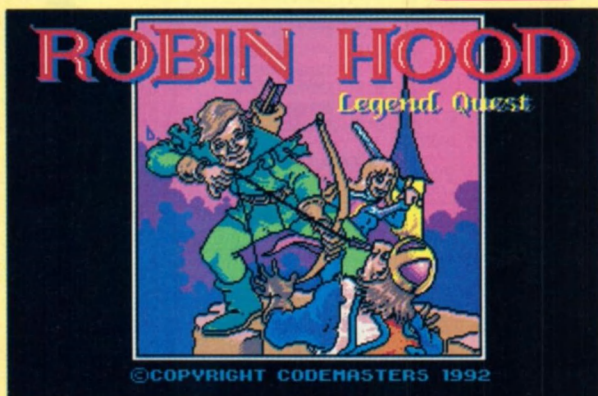
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## ROBIN HOOD - LEGEND QUEST

**CODEMASTERS £7.99**

**71%**

Another Codemasters game which has been available as part of a compilation. This time, it's a platform arcade adventure in the same vein as Gods or Deliverance. Robin Hood has to establish himself as a legend by robbing from the rich to give to the poor, marrying Maid Marian and, er, jumping from ledge to ledge and climbing ladders a lot. Hmm.

He does sport a rather nifty bow, with which he can despatch to pastures greener all of the wicked Sheriff's men who pop up and crossbow bolt him at the most inopportune of moments. Legend Quest won't set any forests alight, but it might appeal if you have a taste for arcade adventures.

## BC KID

**Ubisoft/Hudsonsoft £29.99**

**83%**

Cutie platform games are in. And not to be outdone in the cutie department, Ubisoft have converted BC KID from the US PC version by the team who did TURRICAN. It's all about a tiny big headed prehistoric lad whose girl has been kidnapped by dinosaurs. To find her he

has to wander through various worlds including the stomach of a Diplodocus! Colourful and very cartoony, with a wide variety of end of stage monsters, BC Kid is one of those games that you take down from the shelf for a quickie every so often.

# INDIANA JONES AND THE FATE OF ATLANTIS

**US Gold/ Lucasfilm 1 Meg £34.95**

The man with the hat and whip is back in a brand new adventure, the first without the aid of a film to support it. Using the game engine first seen in MONKEY ISLAND Lucasfilm have tweaked it to be even better. It is 1939, the eve of World War II, and Nazi agents are about to get their hands on a weapon more dangerous than the atomic bomb. Only you as Indy can stop them before the force that sank Atlantis is unleashed on an unsuspecting world. (Ah those were the days, Fred Astaire, luxury ocean liners, virginity and a world that was unsuspecting... Not like today at all, n'est pas?)

Lucasfilm's attention to detail is absolute. Stunning graphics and a sound track that changes with your every move combine to bring us a visual treat that outguns even MONKEY ISLAND.

As usual the scripting is first class, with some classic one

liners, and the actual adventure has three possible paths through, which I suppose gives you two new challenges after you have finished the adventure for the first time.

The paths work like this. At certain points in the game you find yourself back in Indy's office with a decision to make. Should you persuade Sophia, a long suffering friend, to continue to work with Indy on your search (this is the TEAM path), Do you proceed on your own (this is the WITS path) or do decide that it action and fighting that will win the day (this is the FISTS path). The choice of these three ways to proceed will influence the course of the story. While the TEAM, WITS and FISTS paths cross one another at times, many of the puzzles and their solutions as well as the locations you visit will be different. However the paths reconverge once you reach Atlantis.

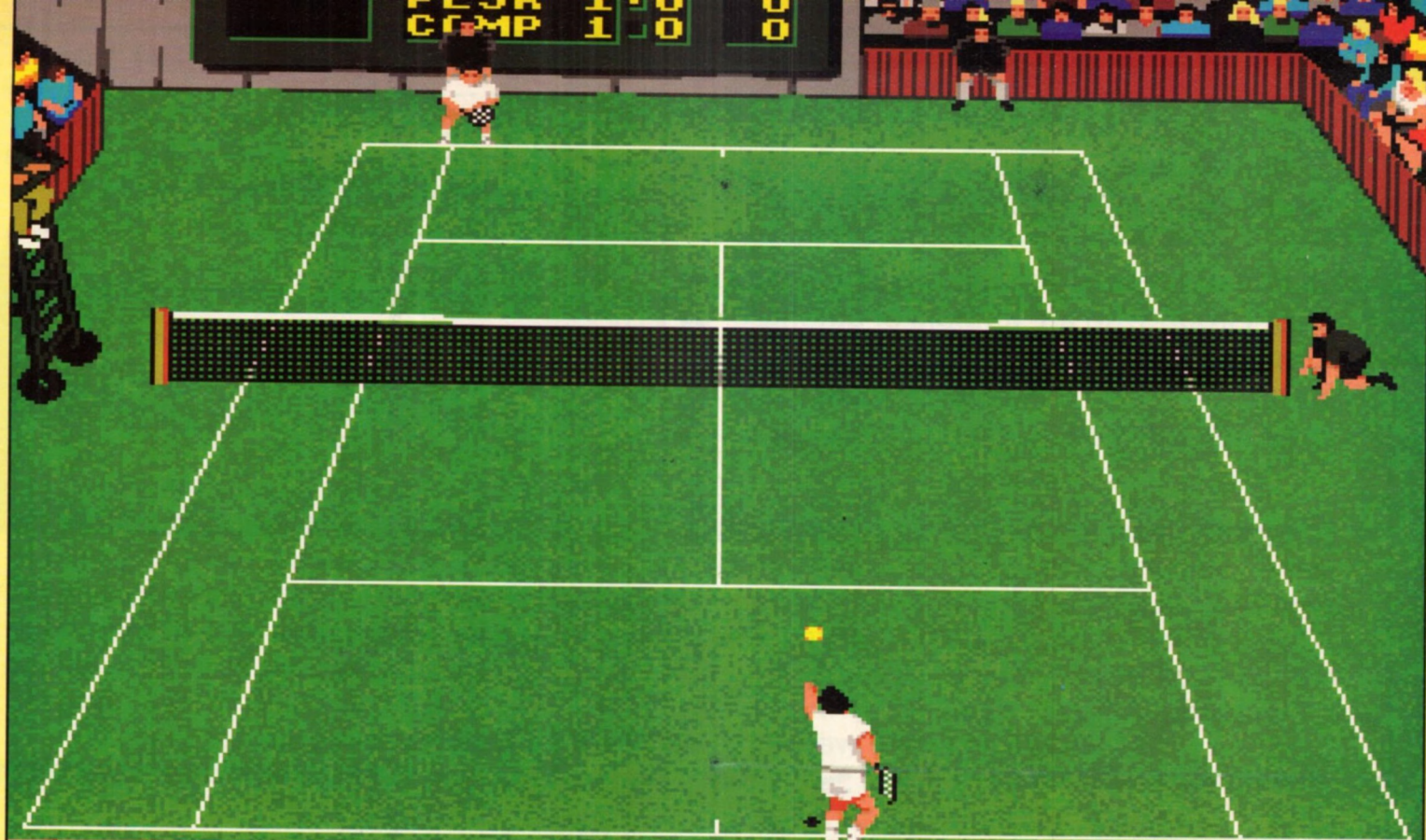
During the course

of the game, Indy will drive a car, ride a camel, pilot a balloon, have the odd fist fight, operate a submarine and repair machinery in the long lost city of Atlantis. Is there no end to his skills? Lucasfilm's game philosophy is that you buy software to be entertained, not whacked over the head every time you make a mistake, so consequently they don't bring the game to a screeching halt when you poke your nose into a place you haven't visited before. It will be made clear when you're about to get yourself into a tight spot. This is a great modus operandi, it makes for great fun, less frustration, and accessibility to all ages.

Indy caters for both novices and experienced adventurers, and on ten disks you are sure getting your money's worth. Yes sir.

**98%**





PREVIOUS SETS  
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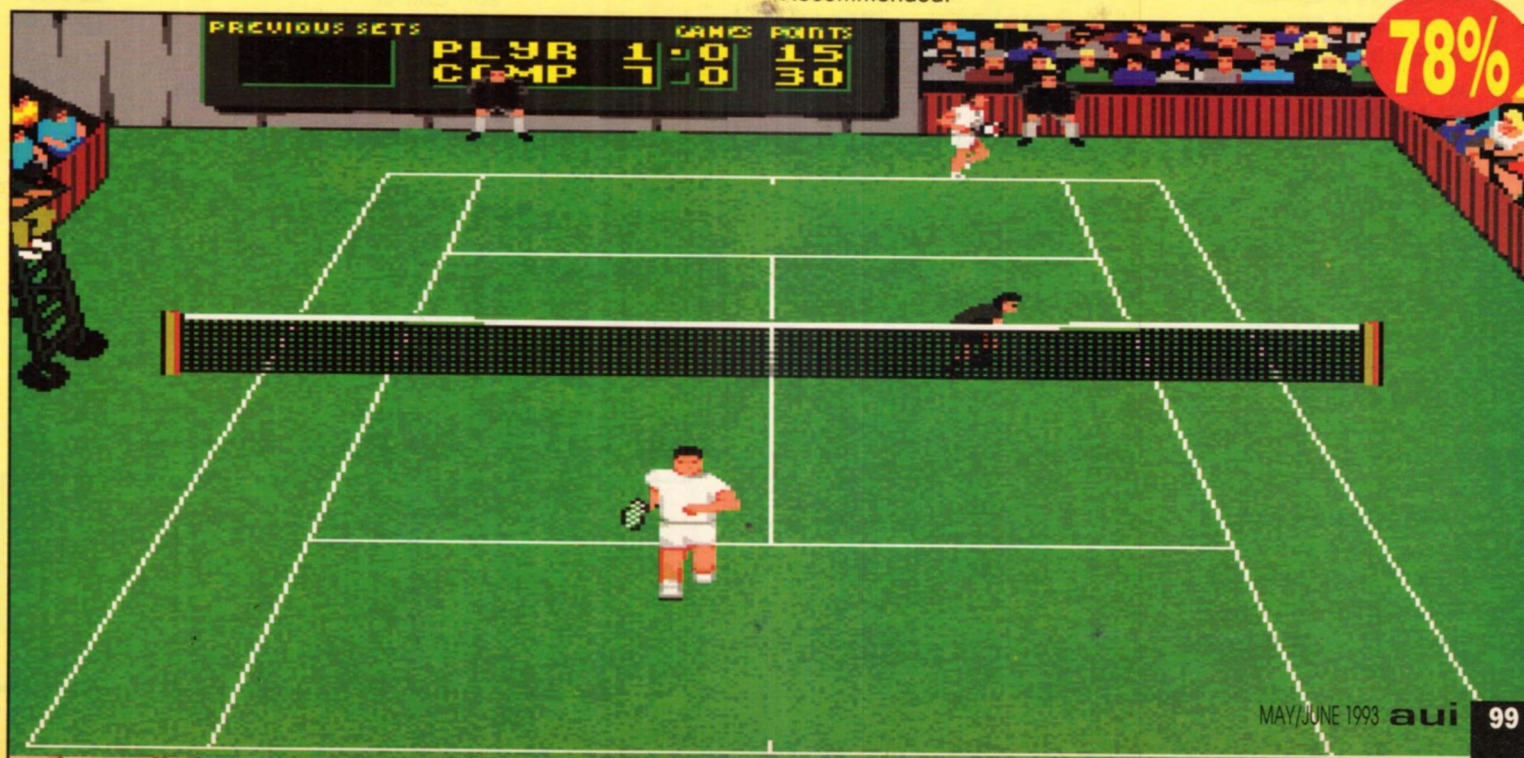
# INTERNATIONAL TENNIS

ZEPELIN GAMES £9.99

I must say that I was pleasantly surprised with this one. It's the same old one-up, one-down screen viewed from the back of the court. The players, who look as if they could benefit from a week in a health farm, face one another on a court which can be grass, clay or asphalt. While the in-game sound is slightly below par, the dull twang of the raquets is muted when the ball is hit from the far side of the court - a nice touch. The umpire 'reads' the score out nicely, although with the lack of a digitised "all", he says "15 - 15" or "30 - 30".

Purists will be glad to note that "Deuce" does make an appearance.

At first the control is a little tricky. Just when you thought that you ought to be hitting the ball up the court, it bounces off your knees or swings wildly into the net, to be retrieved by the ball gnome (well, he looks like Quasimodo actually). But after a few minutes, things become easier. Add a choice of ladies' and men's or mixed doubles, seven computer levels and the option to switch off the speech and this is starting to look like one hell of a well loaded budget buy. Recommended.





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user port

The

# Public Domain Stakeout

## Scoring

The marks awarded to each PD disk are based purely upon its own merits and, of course, our personal views. Value for money and reliability are also taken into account as well as features and quality of the software.

## Compatibility

The PD disks reviewed in this issue were tested on an A500 with Kickstart 1.3. Please check with your PD supplier that the disks you are ordering are compatible with your Amiga. Amiga Plus, 600 or 1200 owners should be aware that roughly half of the software in the public domain will not work with Kickstart 2 or 3. Always ask first.

**Gideon Overhead reports on the latest on the low price scene.**

## PD or Shareware?

All of the freely distributable software under the rather deceiving umbrella of "public domain". Quite a lot of this software is in fact shareware. Shareware means that if you like the software, or use it regularly, the author will request a reasonable donation from £5 to £20. There is usually a note on the disk informing you if the software is shareware or regular PD. Whether or not you send a donation to the author depends totally upon your level of conscience and morals. Remember, if you send a donation to the author, you may receive an updated version of the software. Even if you don't receive an update, you will have given the author the incentive to continue contributing into the public domain.

## Comic Art 2

**Disk P0006  
Cynostic**

This wonderful collection of pictures were all hand drawn and are in Hi res using sixteen colours. There are 13 altogether not including the title and credit screens. As the title suggests all the pictures revolve around comic books. By this I don't mean The Beano or The Dandy. I mean the Super Hero Comic Books. It features such characters as Captain America, The Fantastic Four, Thor, and, of course, Spiderman. Being in Hi-res all the pictures are beautifully sharp and extremely detailed. Highly recommended.

**9/10**







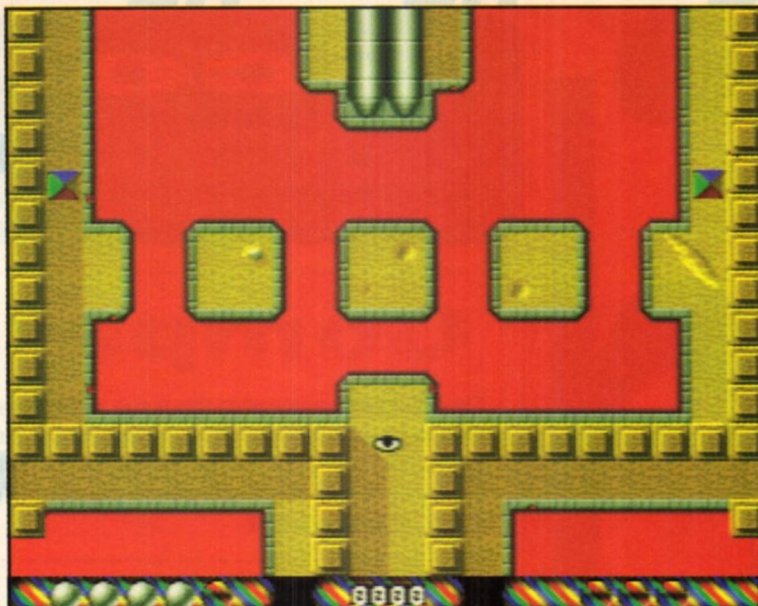
## Anarchy 3D Demo II

**Disk D0030**  
**Cynostic**

The title of this demo is enough to turn people off. You may think we have seen enough vector demos to last us a lifetime. But if a demo has enough new ideas and is well programmed and presented it's well worth getting. This is such a demo. It does contain the usual vector graphics but these don't stay on the screen for very long and you can always press the mouse button if you get bored.

The sound is also excellent with an ultra clear sample at the beginning, and a raved up version of the Gods music during the whole demo. The last part is the most impressive. You use the joystick to move yourself around in artificial space. In this space there are several animated vector objects. You can zoom right up to them and even travel through them. This is a wonderful piece of quality programming and well worth getting.

**9/10**

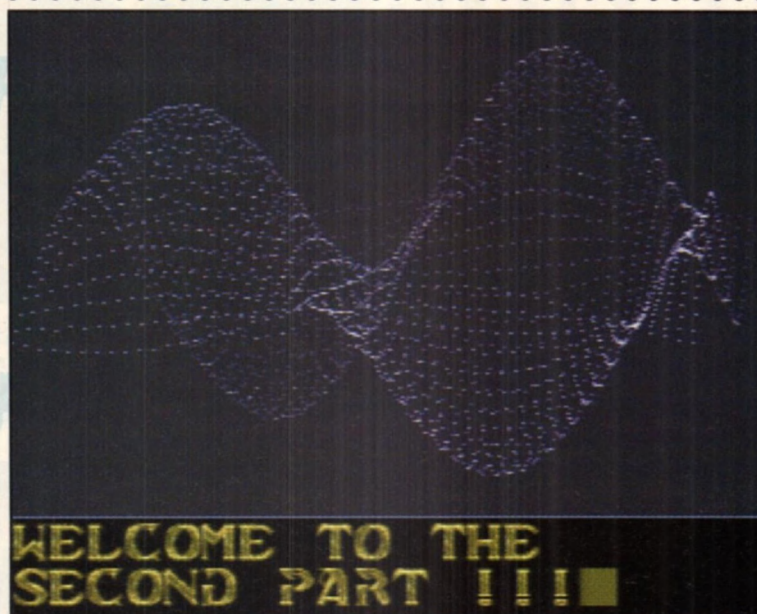


## Kastle Kumquat

**Disk 2316**  
**17 Bit**

This game is an arcade adventure which means a lot of walking around picking up keys and collecting things. Your task is to collect twenty pieces of rare fruit to take back to your king. You view the game from above and so you guide your little man through mazes and past colourful but dangerous rotating blobs solving puzzles until you can find all the fruit. There are no sound effects at all during play. Instead there is a good music soundtrack which plays throughout the game. It is a very playable game and well programmed with some good graphics and puzzles.

**7/10**



## Sanity Demo

**Disk 2344 17 Bit**

This demo contains some wonderful scaling effects. When a graphic is zoomed closer to the screen it has to be re-drawn, this is called scaling. Obviously it loses detail and becomes rather pixelised but it still impressive. The Super NES has a custom scaling chip, as the Amiga hasn't its processor has to do all the work

(with perhaps some help from the Blitter). This demo boasts the fact that it is compatible with every Amiga up to the A3000, and that there are no offending scroll texts. All in all a very enjoyable display.

**9/10**

## Legalize It

**2**

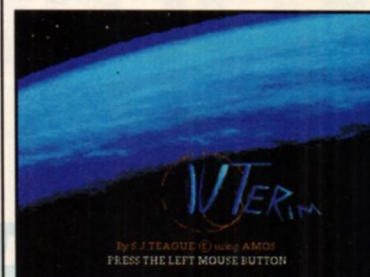
**Disk 50025 A/B**  
**Cynostic**

Legalize what? (Pot?) I don't know what the title has to do with a music disk, but there must be some reason for it. The disks contain eight tunes which are on the jazz theme. They are all very good although some sound like the music you hear when



you are waiting the film to start at the cinema. There are seven hidden tunes on the disk which are very easy to find. This is a disk to get if you collect music disks, but others may find all the tunes too similar.

**7/10**



## Outerim

**Disk 2317**  
**17 Bit**

As this was the demo version of the game it only allows you to play for twenty minutes. If you buy the full version you will get, apart from the game, a manual. As this version did not have a manual I couldn't really work out what you had to do. It looks remarkably similar to the excellent strategy game Millennium 2.2. This is the game where you have to control the running of a moon base and defend it from Martian invaders. The graphics are very blocky but the one arcade sequence I have seen is very fast. Asteroids speed towards you and you have to destroy them before they damage the base. I think it wasn't a very clever idea not to put some sort of instructions on the disk as, if people cannot get into the game, they may not want to buy the full version. The full version costs £15 and it is certainly worth a look if you liked Millennium 2.2.

**7/10**



# Quiz Master

## Quiz Creator

- 1) Create a new Quiz.
- 2) Append current Quiz.
- 3) Load a Quiz.
- 4) Save quiz.
- 5) Quiz Editor.
- 6) Toggle PAL/NTSC Mode.
- 7) Print Quiz.
- 8) Load Scores ( + option to print).
- 9) Delete a file from disc.
- 10) Exit to Workbench.

Enter an option number >

# QuizMaster

**Disk 2357**  
**17 Bit**

QuizMaster is a flexible and easy to use quiz creation program written in Amos. On the disk there are three programs. These are the player, the creator, and the configurator. The configuration program creates a file which the Quizmaster player loads to see which modes and functions to use. These functions are, for example, the number of questions, players and other similar options. The creator is where you enter all your

data. First you enter the question, then the correct answer, and after that three incorrect answers. When you have finished your quiz you can then load that file into the player and you have your very own multiple choice quiz. The creator is very easy to use and very fast. The author suggests that this be used in schools, which I think could be a very good idea.

**8/10**



## SpiderMan

**Disk 3050**  
**Virus Free**

This short Spiderman story is told over a series of three short animations that are loaded one after another. The animations themselves are very good but the loading is long and the playing time is very short. The story-line is along the lines of Spidey stopping a getaway car using his super webbing powers. Each frame is very well drawn and animated, it is just a shame that there is no sound to go with them, but there apparently wasn't enough room left on the disk.

**6/10**

# LCD Dreams

**Disk 2356**  
**17 Bit**



First there was the Game-boy emulator, now we take a step down the ladder to the smaller LCD games. There are four on this disk and they all bring back to me, memories of standing in the playground at school playing them. The four are, Octopus, Parachute, Fire Attack, and Oil Panic. All games work on the A1200 but run too fast to play properly. All the games have detailed colourful graphics, but it would have been nice if they had been the original two liquid crystal blocks.

**8/10**

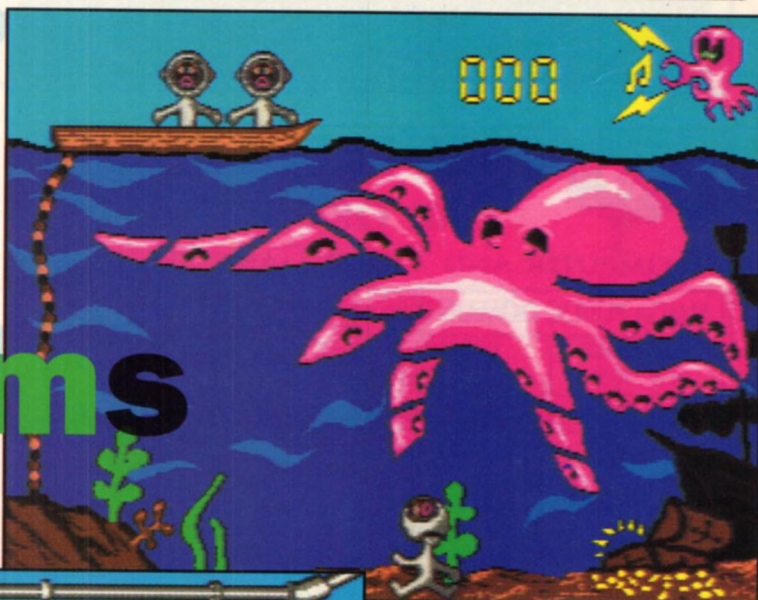
# Vmorph

**Disk 13/U10**  
**NBS**

When I saw this morphing package was written in Amos I had to take a look. To use the program you will need one Meg or more of memory, a digitiser, and a paint package such as DPaint that supports animation. If you don't have a digitiser then you can still use the package, you just need a picture that has a 16 colour grey scale and is in the resolution 320x256. Upon loading, the program will ask you for a source and destination picture. Once these are loaded in the magic can take place.

Vmorph uses a grid editing system. This means that for each the source and destination image there is a grid. Both grids have an equal number of points. So each point on the source image has a 'sister' point on the destination. The more the grid tallies with the key features in your images the better the results will be. There is an example animation on disk to illustrate what can be done with the package. It shows Nigel Mansell morphing into Madonna, a very unlikely combination. This is a good attempt at a morphing package, and it's capable of some good results.

**8/10**





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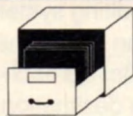
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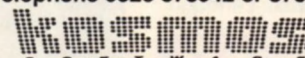
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# Grand Prix Manager

Disk 2334  
17 Bit



This the second of the Grand Prix games this month is not an arcade affair but a strategy game. You take on the task of winning the championship, and have five years in which to do it. All you start with is money, you have to sign a driver, buy an engine for your car, and even choose how many mechanics you want. Each season there are ten races and in each race you see all the cars as they finish a lap. There then follows a scroll text telling you what happened in that lap. For example one car might have crashed and be out of the race. Another might have just skidded and lost a couple of positions.

I didn't make a very good manager I'm afraid, my car finished about ten seconds after the last car! This disk is a demo version, you cannot load or save, and every minute or so the words "This is a demo version, buy the original" appear on the screen and become rather irritating after a while, as, doubtless, they are designed to do. A lot of work has gone into this game and there are plenty of features to keep you interested.

**8/10**



# F1 Girls

NBS

Formula One girls eh? I never knew they existed. Someone anyway has decided to draw seven pictures of these girls. They are all hand drawn and are in Low res and are in half-

brite mode which means they can use 64 colours. The pictures themselves all look as if they belong in a cartoon. It must have taken a long time to draw each of these but

once you have seen them you won't really want to load them up a second time.

**6/10**

# Hailing Frequencies 1

Unicorn Soft

This disk, for those of you who haven't already guessed, is a Star Trek related disk magazine. The first thing that strikes you when you load it is the presentation. It is all displayed in the style of Star Trek The Next Generation (TNG). If you have never seen the show, all the computer terminals use the similar system. It is called LCARS. This stands for Library Computer Access and Retrieval System. Of course the fully fledged system aboard a starship does have voice recognition

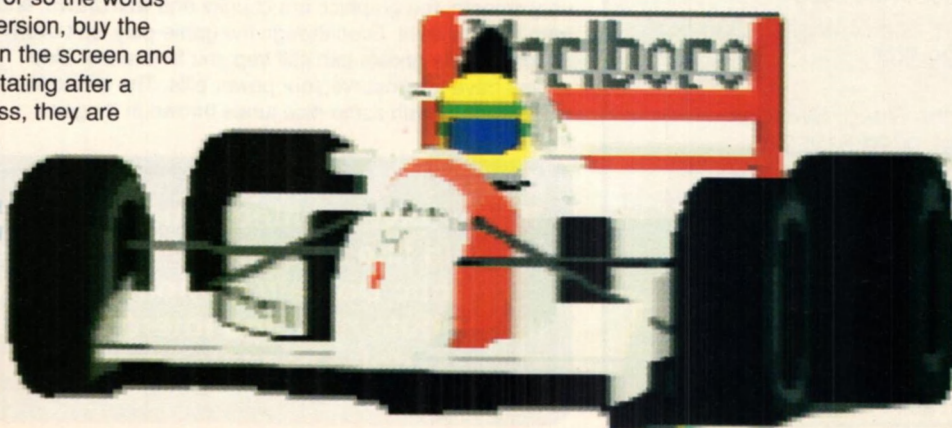
# HAILING FREQUENCIES

StarFleet Command Welcomes You To This Issue



UNITED FEDERATION OF PLANETS  
StarFleet Command

LCARS



but this facility is not available yet, you will just have to use the mouse!

Although this magazine contains articles on other TV shows like Red Dwarf, and Hitch Hiker's Guide, Star Trek is its main concern. You have to be a hardened Trek fan to really know what is going on in these articles. Being interested in the whole Science Fiction genre, I found everything on this disk interesting. There were articles on the theory of matter transportation, episode guides to different shows, even a couple of Trek samples. I am looking forward to the next issue.

**8/10**



# Stolen Data Issue 10



**Disk D0028 A/B**  
**Cynostic**

This disk magazine is in many ways like the Grapevine mag. But there are a few differences. For example, when you load up Stolen Data you get a menu and you can choose from four options. These are loading the mag, a gallery, the charts, and a jukebox. There are ten tunes to hear in the jukebox section and are all worth a listen. The pictures are also all excellent and worth seeing. Although there are not as many articles

as grapevine has (grapevine usually comes on 3 disks) but what there is is good. Some may say there are too many articles on the Amiga scene, but this is what the disk is aimed at. As I don't know a lot about the Scene, I enjoyed the latest Grapevine more than I did this mag. This may be because it had a more diverse range of articles.

**8/10**

## C O N T A C T S

Contacts for PD reviewed in this issue

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Tel: 0983 529 594

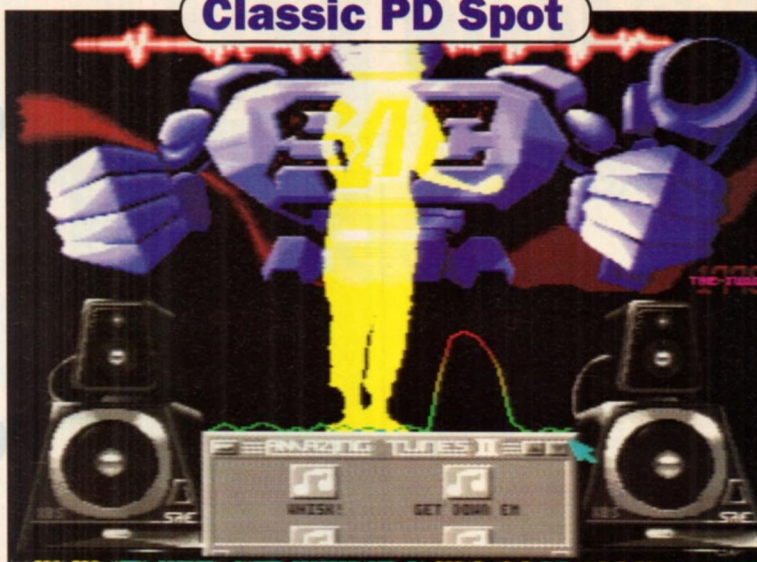
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Cynostic PD 85 Wyken Croft, Coventry CV2 3AD  
Tel: 0203 613817

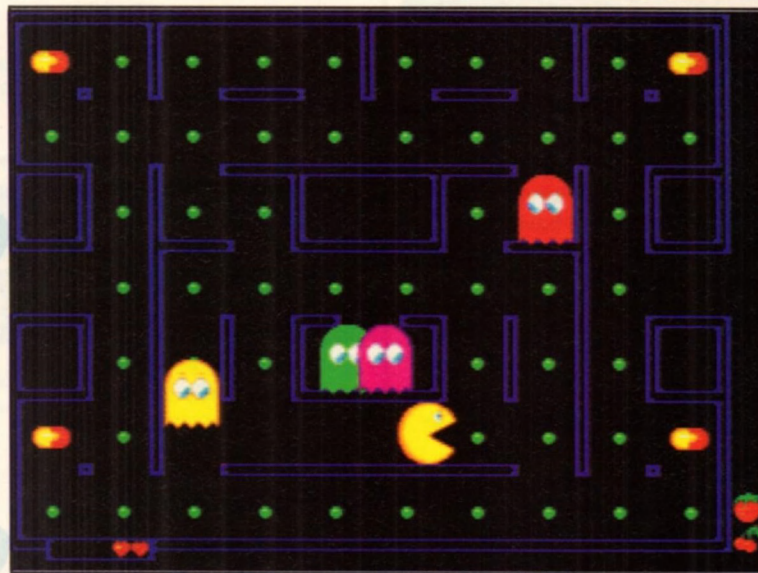
## Classic PD Spot



**Amazing Tunes II**  
**Disk 1096-8**  
**Virus Free**

CDTV users might recognise this screen shot. This music disk's front end appeared on a Almathera PD CD but the difference here is that these disks contain just twenty tunes where the CD has hundreds. The tunes are all excellent. There are some wonderful Black Adder samples and a great FM sound module.

**8/10**



## Deluxe Pacman

**Disk 2353**  
**17 Bit**

If I had seen this game in a PD listing it wouldn't be one of the first disks I would pull in for review. This version however is fantastic. The game-play is very smooth, the graphics are chunky and well drawn, and the mazes differ from level to level. Even though the game-play isn't overly difficult, if you are not careful the ghosts can still trap you from either side so you have to conserve your power pills. The sound is also excellent with some nice tunes thrown in for good measure.

**9/10**

If you have created a masterpiece and you would like it reviewed here, if you own a Public Domain company and want to contribute new and interesting PD, please don't hesitate to send it in.



# amiga answers

## Answer Types

### APPS

Programs etc

### VIDEO

Video related problems

### COMMS

Communications

### PROG

Programming

### OS

Operating System

### PRINT

Printer Problems

### OTHER

For anything else

## PROG

Dear aui

I am an Amos programmer who is wishing to know if your company can help me with a problem.

I want to use a Zydec Scanner line a barcode and text reader but I cannot find the correct information from companies to read the scanner.

The scanner is a 16 colour B+W scanner that uses the parallel port. I want the codes so I can use POKE and PEEK in Amos the only information I have is: D0-D7 input DATA D7 is left most bit

ACK\* input STB Strobe from scanner  
BUSY output ON switches on scanner  
SEL output Next strobe to scanner  
POUT output STRM high for stream mode

I have written to Trilogic who sell the equipment and they cannot help me and I have written to the company who wrote the scanner but they haven't written back. I would be grateful if you could help me as this information is crucial to one of my programs.

Andrew Postill  
Coventry

Dear Andrew,  
Well you have all the information you need on the scanner, apart from the operation of the stream mode. The rest is a matter of driving the

parallel port. The Hardware reference manual, and the Abacus book "The Amiga System Programmers Guide" cover the Parallel port. CIA-A is the chip concerned and the addresses are:

\$BFE001 PRA (IO port A)  
\$BFE101 PRB (parallel port)  
\$BFE201 DDRA (data direction register A)  
\$BFE301 DDRB  
\$BFE401 TALO (Timer A low)  
\$BFE501 TAHI (Timer A high)  
\$BFE601 TBLO  
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\$BFEC01 ICR interrupt control register  
\$BFEE01 CRA control Reg A  
\$BFEF01 CRB

Do a few sums first, the scanner I'll assume 200 dpi resolution, say you moved the scanner at 1 inch per second, and the scanner had a 4 inch scan width.  
 $200 * 4 = 1000 \text{ dots}$   
 $1000 * 200 = 200,000 \text{ dots for a one inch movement of the scanner}$   
 $200,000 / 8 = 25,000 \text{ bytes of information}$

Your AMOS program would have to service the port 25,000 times per second just to keep up with the scanner. On top of that you will have to store the data somewhere before the next byte of information comes in. Even if you have the Amos compiler I don't think you will be able to pull things in fast enough. You are looking at some tight C code, or some assembler to do this part of your requirement.

## OS

Dear aui,

I have recently purchased the February issue of aui I read the covering article on the Cover Disk and decided immediately that it would be an ideal accompaniment to my hard disk. I quickly installed it and loaded all my favourite programs.

To my dismay, I soon found that my most used program - Pen Pal- would not load, even though HyperHelpers accepted it into Launchpad. I tried all the different combinations to no avail. Then I realised that the problem was simply because of the space between Pen and Pal in the program name. I tried another one with a space and got the same result.

An easy solution would be to remove the space, but this would also mean changing all the addresses within the program, which seems quite drastic for such a minor fault.

As I am not proficient enough to be able to alter the program, could you please advise me if there is simple solution to this problem. I look forward to your reply, and thanks for a great mag.

FS P. Vaughan  
RAF Bruggen

Dear P. Vaughan,  
Simple problem to which there is a simple answer.

"Pen Pal" note the quotes! That is a general rule with Amigados the delimiter characters can be spaces or quotes.

In HH you have to do a little sneaky work in order to get this working. Bring up the configure launchpad window and select your program in the normal way.

Now edit the HomeDir to match the path of your program, and edit the Program to ONLY have the program name (with the quotes) i.e. Fred:utilities/calc ulator would become:

Program "Calc ulator"  
HomeDir Fred:utilities

You should find that things work as normal now.

?

## OS

Dear aui,

NB. This may be the last letter that I am going to type, using my trusty old A500 as I am going to buy the A1200. Therefore I have some questions that I would like to have answered;

1. How much faster is the A1200 with built-in 68882 FPU, as opposed to the standard A1200?
2. What is the difference between the 68881 and the 68882 FPU (performance and price)?
3. Is it possible to change the diskdrive configuration of the A1200 in order to use 1.76 Mb disks?

Thomas Christensen  
Denmark

Dear Thomas,

The A1200 will not run one jot faster with or without any FPU. The FPU is a special co-processor that enables programs that know how to use it to perform mathematical functions MUCH faster. ONLY some programs know about FPU co-processors, ray tracing, CAD drafting programs etc. Other programs will ignore them and work in the same way as before.

Some of the libraries that the Amiga uses know about the FPU, but again these only make use of the FPU when a mathematical function is called.

The A1200 does not come with an FPU, and if the seals on the case are broken then CBM say that the warranty will be void.

The 68882 is considerably faster than the 68881 (from memory nearly twice as fast) and the cost is about double as well!

However silicon prices vary from week to week, depending on demand so you



# ← amiga answers ?

may get a shock, or a pleasant surprise when pricing things up.

I understand that it is just a matter of fitting the correct HD drive to the A1200, however I don't know of anyone who has done this so I can't say 100% that that is all that is required. Software Demon are a company who advertise in **ai** that offer this service.

## VIDEO

Dear **ai**,

Being a dedicated user of an expanded A500+ for post production video titling I have one major technical question about my possible future upgrades.

Presently I'm using an Electronic Design Genlock to overlay graphical titles over video signals. (DVT) With this setup I have several problems when using HiRes since on TV the output is flickery I can't avoid using a TV since my clients would watch the final product on a normal TV set using a VHS video player.

I have seen several reviews on the new A4000 with the **AGA** chipset which can display resolutions up to 1280 x 512 with 256 out of 16.8 million colours at once.

Also I have read a lot about several 24-bit graphic cards which when connect to the desktop Amigas (A1500 upwards) can produce stunning effects.

The obvious question is : Is a normal TV set capable of displaying all these colours and resolutions (24 bit and AGA) or are these useless?

Some additional questions:  
Does and OpalVision card exist for the A500+?

Which is the best 24 bit graphics card?

Can you publish a head-to-head comparison between IV24 AVideo HAM-E DCTV OpalVision stating each price, memory needed whether an accelerator is necessary. If the board comprises genlock and flicker fixer and Amiga needed.

Dominic Cachia  
Malta

Dear Dominic,  
**ai** reviews many products, A head to head as you suggest would not give full justice to any one product, nor to the readers who are

not interested in video. It is much better to publish one good review of a product in one issue. By making use of your back issues you can have a much better 'head to head' comparison that if it were all in one issue. **ai** will do head to head type reviews ONLY IF the products warrant it, and if the Editor decides to publish one.

I am not getting into which 24 bit card is the best. 'Best' is a subjective term and depends on many factors. I know what I would be looking for, but that might be completely the wrong thing for you. LOOK at a lot of cards, then make your decision taking into account the features that YOU want.

I've not seen anything about Opalvision for the A500+.

The normal TV set is quite capable of displaying a huge range of colours. If you can produce a composite video signal of the required standard is another matter altogether.

The flicker is due to how the TV displays the image. By careful selection you can get rid of a lot of the flicker. However it is better to stick with the non interlaced modes for TV use.

A TV will not display the A4000 hi-res modes. You need a good multisync monitor to do this. A PAL TV can display about 800 dots in the horizontal direction and 312 lines in the vertical direction (ignoring interlace) That requires the TV to be perfectly set up. Another problem is that the colour information is wedged into the Video signal and is rather limited, hence the herringbone patterns that sometimes occur when a fine line pattern is shown (like on a presenter's suit)

A further complication is that unless you are using broadcast quality VTR systems you will not be able to record at broadcast quality anyway. Everything will be a compromise. The extra colours of the 24bit and AGA systems will enable you to produce some very slick results, far better than the basic Amiga 500, but you have to know the limitations of the other system components to get the best out of them.

## APPS

Dear **ai**,

I am considering buying an EMPLANT board , for my Amiga , I have a few questions

1 . Can you install more than one

computer's roms on the board at one time , i.e. could I put Mac and IBM roms in , and then switch between the Amiga, Mac, and IBM with software alone?

- Is there a new AA chipset version of the board which will support true 256 colour emulation without buying a Mac's graphics board?
- What is Mac IIx emulation equivalent to, in the new range?
- Could you recommend a 68030/68040 accelerator board with an mmu and co-pro, which would work well with the board?
- How much do Mac roms vary in price , and where can I get hold of them?

I would just like to say that from what I've heard this is an excellent and intelligent peripheral , and I hope you will be giving it a full expose , very soon.

After all the Macs have some killer DTP software packages , and before now I have been thinking of dropping my Amiga to get a Mac, just to be able to use this software , but now I can have the best of the both worlds. And for a good price.

HOW LONG WILL I HAVE TO WAIT TO GET HOLD OF COMMODORE'S AA CHIPSET. EXPANDABLE IN YOUR BEST GUESSTIMATION A1500 EQUIVALENT MACHINE, YOU KNOW THE A2200 OR WHATEVER IT'S CALLED.

WB Questions:

- Which WB Drawers, Tools, and C commands (system, Diskcopy, Execute) can I rename without causing problems within the system?
- Can you pack executable WB progs ? , (clock , calculator , etc) also can you powerpack the c commands, libs, Devs: etc and will they function fine?
- What does a pure bit not set error stem from , when my startup-sequence is running (not too technical please)?
- I have access to a Mac connected to QMS ps 410 laserwriter , which Amiga DTP software can be used to export to Mac/Mac software with PostScript. Or is there any method by which information can be transferred i.e. an Amiga to Mac piece of software (like Messydos / Crossdos)?
- This WB Question is aimed

directly at Commodore. Why does it take eight/nine disk swaps! on my single drive machine(spec as above (WB 1 .3.3 ver 34.34)). To copy a single library file or c command , from one disk to another. When the copy command is in ram:, when addbuffers has been used in the startup-sequence , to increase the disk buffer from 5K to - 24K? Why, oh why, Commodore is this process not just two disk swaps, i.e. one read one write.(Is it just my machine or is it just me?)

Some of the A4000 screen modes seem a bit daft 320 \* 1024 ? Why hasn't Commodore aimed for square resolutions? You may say it has 1024\* 1024 (shi-res int?). Admittedly this is a marvellously ideal resolution especially with 256 colours, and would be a definite step ahead of the IBM compats and Macs. But from what I've heard (magazines), this slows the system down some and is interlaced.(This does, I presume, mean flickerflicker ...flicker.) Please say I'm wrong, if I am then the the A4000 graphicswise is a very interesting machine indeed.

You recently ran an article on SONY's mini-DISC, this machine sounds good , but does it have in my opinion what will make it a great storage technology of the future..... I think we need a medium which can not only store music , but also computer data, and video, Hi quality still images all on the one machine . (when at present we are sold a different machine for each purpose) It also needs to be digital and not based on a material which degrades with age or use. Preferably then, not a Device which reads magnetically ,or tissue paper for instance (ha ha a erm). Coming to a conclusion I think SONY's mini-DISC may have it, by simple virtue it records magnetically but reads optically . Meaning no matter how many times it reads , the integrity of the information is never questioned. The only time it is, is when writing to the Disc, so the risk of. it fu@\$%g up is greatly reduced over along period of time . I think SONY should also come up with the SONY BIGGER-DISC , ie perhaps the mini-DISC is to small to store large amounts video and data etc . Without a damaging form of compression .

So when will SONY Release it and what will it be capable of. that's the Question ...

I'm not going to say anything like keep up the good work, or anything sissy , just get slaving you shirkers, what do we pay you for...!..! (don't go bankrupt in the next few months or I'd feel guilty).

Darien Morgan Falmouth



Dear Darien,  
We are in the process of evaluating a an Emplant board under real publishing conditions and we should be able to give you full details shortly.

You should address your questions about such products to the manufacturers. I do remember all the fuss over the copyright aspects on the AMAX units that needed MAC roms, so don't hold your breath over the Mac emulations, I suspect that Apple will have something to say on that matter.

I would think that Mac II emulation is equivalent to a Mac II. It is impossible to say what will and what won't work with such products, ask the designer!

Commodore's expandable AA chipset machine is already here. It is called the A4000.

Why do you want to rename commands? If you do not like the name, then you could use the alias command. Some directories are assigned on startup and should be left alone i.e. C: lib: etc. you can always use the path command in your startup sequence to add more than one directory.

For example I have a directory called Alt-C where I keep files such as snoopdos, sound etc. and in my startup sequence I have a line that says:

Assign C: Primary:C Primary:Alt-C

The Amiga then searches both directories for commands, and I keep my C directories tidy.

You can pack most commands providing you have a reasonable packer program. I don't use such programs at all, they annoy me.

The pure bit not set means just that. A program is 'pure' when it is completely re-entrant, i.e. it can be called many times once it is in memory, and when it keeps track of things when it gets interrupted. It could be halfway through an operation when it gets called again, and it must handle the new call and still keep track of the old operation.

The not set problem was probably caused by a copy process that did not copy over the protection bits. The CLONE option is provided for this purpose. Resident programs should be 'PURE' if you want to call them to fully multi-task.

Macs have a program like Crossdos that enables them to read PC format disks. So if you use Crossdos and the Mac uses its equivalent you will have no problem. Save the file as a ASCII file and let the Mac convert it for you.

There are several products that will output in PostScript, the new Pagesetter 3 is one that comes immediately to mind as do all of the professional DTP packages.

It takes many disk swaps because the OS is looking for lots of different programs to do the copying. Use the Ram disk and the

CLI for speed. Make copy resident, and then COPY DF0:yourprog TO RAM:

then COPY RAM:yourprog TO DF0:yourdisk/yourpath

That will help. GET A SECOND DISK DRIVE that will help even more.

There is nothing daft about any screen resolution for any machine. They are all features of different modes of operation. Another thing to watch out for is Aspect Ratio. You might have noticed that many TV systems do not use a square screen at all, so there is little point in having a square format. However the A4000 provides virtual screens of over 16000 by 16000 pixels. It is the limitations of the display device that causes problems.

Interlaced displays are a feature of our TV system. FLICKER IS CAUSED BY THE DISPLAY DEVICE NOT THE COMPUTER. Some modes on the 4000 do flicker but with a good multisync there are lots of modes that do not. I use a 650 by 500 (ish) display, and it is pin sharp and rock steady.

I sometimes use other modes as when I am displaying large pictures and I accept the flicker (if any).

The number of colours does slow down the screen, simply because of the amount of data that has to be shifted. I would say that working with a 256 colour Workbench is faster on the A4000 than the normal workbench is on the A500. (I normally have the WB set to 8 colours.)

It is a simple matter to get the specs of new machines. Become a registered developer. That will provide advance information.

Interesting comments on the Sony mini Disk which in fact is already out and being sold. I predict that the mini disk is not the last advance in mass storage by a long way. Recent advances in hard disk will mean a 200 fold increase in capacity without too much trouble. The advent of the blue laser diode will increase the storage of optical systems greatly. Massive solid state stores are being produced 20 Mb figures are commonly quoted. And they are talking about 2 gigabyte CDs...

**When writing to Amiga Answers include as much information as possible about your system and about which software/hardware you are running. This will help to determine what your problem might be and its solution!**

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# write to reply

**This is where you get your  
chance to speak – or write –  
your mind about what's  
bugging you. Bud Vennos  
fields the bouquets and the  
brickbats.**

Dear aui,

There are two reasons for writing this letter:

First, why did the January 1993 edition of the 'Amiga User International' have no coverdisk? According to my news agent the importer (Is that Gordon & Gotch?) did receive them without disks. Do you dispatch the disks separately or are they stuck on with sticky tape before dispatch. There was no mark left on the magazine that it had a disk stuck to it. Neither did the copies of a few of my friends. We pay here in Australia about 5 Pounds for your magazine and for that money one expects a disk.

Second, I am the vice president of an Amiga User Group with 200 members and we would like to find a sister organisation in the UK with whom to correspond or at least exchange our magazine OUTPUT which appears every two months. Perhaps a note in Amiga User International may alert some active member of a club in the UK to take up contact with us. For that matter any user group in the world that wants to exchange their magazine with ours is welcome. If they just send a copy of their magazine to: East Coast Amiga Inc. Attention Tony Drieman PO Box 344 Gosford 2500 Australia. I will put that group on our mailing list.

You can reply with sending a fax to:

Manly Pacific Parkroyal 61-2-9777822 attention Tony Drieman, Relieving Night Manager.

But how do I get the missing Super Disk 19? You could send me one and with your permission I will give a copy to those that I know bought the magazine and missed out also.

Hoping to hear from you soon and thanking you in anticipation for your co-operation,

With friendly greetings,

*Tony Drieman,*

*Vice President ECA Inc.*

PS I consider aui the better U.K. Amiga publication. Most U.K. magazines concentrate too much on games and many are too hard to read with dark blue lettering on black back grounds and such, Keep up the good work.

Dear Tony,

There is surely some mystery about the January issue of aui in Australia. It seems that a number of your fellow countrymen/women did not receive the disk. So if anyone from there cares to contact us - or you - we will be happy to supply it free of charge. We are sending you the disk for you to distribute as you wish.

We certainly wish you the best with your User Group. User groups are vital I think for lots of people who can be helped by the joint pool of expertise. ICPUG in this country provides an excellent resource for users and has done so for over ten years. I hope that your user group lasts as long!

And thanks for the compliments. It's always good to know that we are pleasing our readers.

Compliments, I have to say, are great to get but they won't get a letter published unless it has something useful to say too!

Dear aui,

Whilst I agree that it is hardly fair that my first ever letter to you should be one of complaint, having enjoyed your editorials outgoings for sometime now, I feel some 'constructive' criticism is due, in respect to your 'new look'

I am referring mainly to March 1993's issue which is I feel representative of a new look.

I firmly believe that the purpose of the magazine, first and foremost, above any other consideration, is to be read by the reader. If it can't be read, no matter what it says, is irrelevant. And this, eventually, brings me around to my point.

My eyesight is pretty good, I don't need glasses, and I'm not geriatric (36 this year if you must know) but red letters on a grey background are awful hard on the eyes whichever way you look at them! Especially as the article (page 85) was quite relevant to the preceding text.

Next there's the great chess challenge, Colossus chess report was half obscured by the background pic. Okay that's just two instances out of 116 very informative and very enjoyable pages, but the point I'm making is that if it can't be read it's useless, I think you must agree.

Apart from the above comments I am fairly happy with your magazine, although personally I feel that after owning my Amiga for two years I have 'out grown' some of your simpler articles, I accept that you are in a position of trying to please a general readership made up of beginners and experts alike, which I feel you do, admirably. (Time for a creep).

While I've got your attention (wake up) I thought you might be interested in an idea for a coverdisk program. Why not get the GIGAMEM people to write a program to utilise a second floppy drive containing a blank disk to give an extra eight tenths of a meg extra memory for any Amiga? Surely it wouldn't be that

hard, and would hardly effect sales of GigaMem itself, only act as a good advert for them!

And finally (admit it you thought I was never going to go) on the subject of magazine articles, and again referring to March '93, I enjoyed the Smart card article, but feel you missed the main point, that being the fact that what we all wanted was some instructions for the construction of an interface to allow the Amiga to take control of the card Rom, and allow viewing of Sky Movies without subscribing. After all I'm sure your readership would be far too honest to use such a device, but it would make an educational hardware project, don't you think?

One last item, on the hardware front, how about a series of diagrams describing cables, serial, printer etc, they cost upwards of a tenner plus postage, but the bits to make them cost about four pounds from your back street electrical store. Personally I've got a P.C. modem and cable, but despite the diagram in the Workbench manual, I'm too frightened to connect it up, a clear accurate diagram in your pages would give me the reassurance I need to get the soldering iron out!

Thanks for taking the time to read this letter, that is of course assuming it's not in the bin yet. And good luck with the future of the magazine.

**Rob Taylor  
Warrington**

Dear Rob,

Funny you should mention a "new look". For months we had quite a flood of complaints about some of the design problems that happened when we did launch a new look last Summer. If you are a regular reader you will know that I was at pains to answer the letters - though I have to confess that I wasn't always in favour of some of the ideas that were being tried at the time.

However, wiser counsels have prevailed. (What I mean is that the ideas I didn't like seem to have been gradually dropped!) And now as you can see, the magazine on the whole looks very attractive and is easy to read. Just occasionally we get a hiccup and red goes on grey but accidents will happen...

We know that we are improving because the floods of letters have dwindled to a trickle - just yours this month in fact.

You are quite right and possibly have a number of readers who would agree with you when you feel you have gone past the beginner stage which some of our articles cover. But you are also right in that we have to look for a growing audience among newer Amiga users too, especially those who don't want the very games-orientated magazines.

The Smart Card article did not, as you say, cover some aspects of the matter but the one you mention -



watching Sky TV without paying for it is certainly not what we would want to promote. We don't want the awful Rupert Murdoch breathing down our necks!

As for the GigaMem idea, that's an excellent one and we shall definitely put it to them. We'll keep you informed of their progress. And we'll see if we can get those diagrams and cable material you want into a future issue

**Dear aui,**

I am producing a project on **COMPUTER VIRUSES** as part of my school work, but I am very short on resources, any help would be gratefully accepted but an urgent response is required.

**Richard McConnachie,**  
**Aberdeen**

*Dear Richard*

The first thing you should learn about the world is that no-one can be expected to do your work for you. And the biggest part of work is the thinking that goes into it. If you are doing a project and you want help, you don't write to magazines for them to provide you with resources - we sell - yes, sell, information.

Read the magazines and you will find plenty written about computer viruses - especially in the MSDOS field where viruses are rife.

We have published articles frequently on this plague and if you want information you should get those articles. But your project is your work and you have to find the resources - libraries, magazines, people can all help you but think thoroughly before you casually ask for something that you ought to be taking care of yourself.

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Read the magazines and you will find plenty written about computer viruses - especially in the MSDOS field where viruses are rife. Or try contacting Goldstar PD where the expert Michael Sewell of the Virus Research Centre lives.

We have published articles frequently on this plague and if you want information you should read those articles. But your project should be your own work and you have to find the resources - libraries, magazines, people can all help you but think thoroughly before you casually ask for something that

you ought to be taking care of yourself.

And "response"? Why not use a spellchecker?

**Dear aui,**

Having purchased my December issue of **auI** I was thumbing through the pages and came across the Amiga User Direct advert. As I have been on the lookout for a book that would give me greater insight to Amiga DOS I was more than pleased to see that you were offering a couple of books on just that subject at a reasonable price. The books in question being 'Beginners Guide To DOS' & 'DOS Secrets'.

As they seemed to fit my requirements I duly sent off my remittance and yesterday I received the said books. As I was looking through the index of **Beginners Guide** I noticed that one chapter dealt with 'AUTOEXEC BAT' command. Having attended a short course at work on the PC's I recognised this as a PC DOS command.

On returning home I looked up the advert to see if it stated the books were dedicated to MSDOS. It did not. I was dismayed, as I was looking forward to being able to get to grips with Amiga DOS at last. I would have thought any book you advertise for sale under the **AMIGA** flag would have been dedicated to just that, the Amiga. I wonder if anyone else has fallen into the same trap as I.

Please could you in the future ensure that when you choose 'the very best' for your readers, you do that in a clear and concise way.

Now that I have had my moan, please keep up the good work. It is good to read your magazine, especially as you tend to lean towards the more serious user as opposed to the games machine user.

As I have only last week sent off for a PC Emulator I shall in fact find the books of some use. This doesn't mean I am about to move over to a PC, I am more than happy with my Amiga 500+, especially if I can have the best of both worlds.

If you are able to supply me with the title of a book for Amiga DOS, I would be most obliged.

**Timothy Pidoux,,**  
**RAF Gutersloh**

*Dear Timothy,*

You are quite right if there is a book on DOS it should be explained that which operating system it is dealing with. We are now not involved with readers offers because we found that we did not have the available person power to ensure it was carried out properly and would avoid the problems of the kind you describe.

We may in the future get involved again so that readers can get some of the special offers that would help them use their Amigas to their greater enjoyment.

At least the MSDOS books won't go to waste if you are going to get a bridgeboard. There is in my view a place for both MSDOS and

Amigas in this world. They may well serve different purposes and if you can get the best out of both, more power to your elbow.

If you read the April issue of **auI** you would have found that we had a special feature on books including some for Amiga Dos.

**Dear aui**

Well, This is the bit where I make my comment about your mag.

1. Why is it that your **FISH** disks reviews are so far behind the actual releases, but the utilities from your (otherwise excellent **Coversdisk**) are from the very latest disk? The progs that you have been putting on recent disks are from **FF700+**, but your reviews are way behind.

Just send me the disks as they are released and you can have them back the next day with a comprehensive review! Simple.

2. I happen to like the new style of your magazine, bold, without going overboard is the way I would describe it.

3. I also think that it is good that most of your Cover disk progs are **DOS2.X** only as well. It is another good excuse for people to upgrade. I upgraded some four months ago, and for my eighty quid got **KS2.04 ROM**, four disks and 2 huge manuals, and yes there is a very good section covering **ARexx** in there as well. I also had a rather nice surprise in that I received **WB2.05** instead of **WB2.04**.

4. I think it is essential that you run a tutorial on Hard Drives. I am amazed at the amount of people that write to magazines with what are basically very simple hard drive problems. The main reason they have these problems is because they have been never been told how to set up their drive properly in the first place. I'm sure the fact that people buy their drive with software already installed can only make problems worse. After all people in general are basically lazy are they not?

It would be nice if you could run a detailed tutorial covering all aspects of setting up a hard drive right from the moment you first switch it on. Paying special attention the need for partitions, memory usage assign and start ups sequences. These seem to be the areas were people encounter the most problems.

I believe this is an essential because as I am sure you will find from your reader survey hard drives are very high on an Amiga First the **Fish** diskowners priority list.

5. An in depth tutorial on setting up and the usage of printers would not go a miss either. Yet, another cause of hair loss for Amiga owners I'm sure you will agree.

6. More serious articles, less games. The Amiga would seem to be getting more and more credible as a serious business

machine especially as the new wave of Amigas are vastly superior in terms of articles and reliability. Leave the games to the games mag.

7. I think your magazine should be given "The most improved Amiga Magazine Of The Year" award.

In the last year your magazine has improved immensely. And the best part about it? It's produced on our favorite computer.

**Grahame Fendle.**  
**Basingstoke**

PS. Change that poxy stuff you tape your disks to the front of the mag with. I'm a bit fed up with tearing the front of my magazine to bits.

*Dear Graham,*

First the **Fish** disks. You may not have noticed but we don't in general cover the **Fish** disks separately now. We include them in the overall PD article. For that article we depend on the suppliers of PD to tell us what they have available. Where the **Coverdisk** is concerned we ourselves are responsible for getting the programs from any of our many sources - mostly in the USA. That's why the **Coverdisk** material is much later than the reviewed programs. It would anyway be somewhat unfair if we were commenting on PD programs which were not yet generally available.

You aren't right in saying that most of our **Coverdisk** programs are 2.0. We take a great deal of care - especially since the readers survey told us to - to ensure that the largest part of our readers are still - some would say stuck - in the 1.3 stage. You - and I - may enjoy the new advantages of 2.0 or even 3.0 but as yet, unfortunately we're still in the minority.

You will see from this **auI** that we are indeed starting down the hard drive trail. We have a major feature on hard drives and we intend to continue and your suggestion of a tutorial has been duly noted. It's a good idea.

So is your idea for the printer tutorial. The Editor tells me that he thinks it will be interesting to a lot of people and will make sure one appears shortly.

More serious articles, less - surely you mean, fewer? - games? You must be looking at the wrong magazine! We carry very little games material. Though I know that there are quite a few readers who would welcome **auI** dropping games altogether. But we do intend to look at our games coverage in the future and I think you will be seeing some changes in the way we treat the more intelligent games. And we hope to increase our general coverage of the more serious aspects of the Amiga too.

Now there's an award we all at **auI** would welcome "The Most Improved Magazine of the Year." But we would like to win it the coming year and for our readers to tell us - and others! - about it. Thanks for your comments.





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AMOUNT OF CREDIT	12 MONTHS		24 MONTHS		36 MONTHS	
	MONTHLY PAYMENTS	TOTAL PAYABLE	MONTHLY PAYMENTS	TOTAL PAYABLE	MONTHLY PAYMENTS	TOTAL PAYABLE
200	£22.00	£264.00	£12.43	£298.32	£9.31	£335.16
300	£34.99	£659.88	£31.06	£745.44	£23.27	£837.72
1000	£109.98	£1319.76	£62.13	£1491.12	£46.54	£1675.44

APR 29.8% WRITTEN QUOTATIONS AVAILABLE ON REQUEST

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## AMIGA A1200



The latest, the ultimate, the best home computer available. 16.8 million colours, superfast processor, superb stereo sound, lightning speed – the all new Amiga 1200 has them all. Marvel at the ease with which the Amiga 1200 and its amazing 32-bit processing power devours the most demanding software. At this price the A1200 has no equal – forget the rest, it's definitely the best!

### 1200 STANDARD FEATURES

- 68020 Processor • PCMCIA Slot • 2Mb Chip RAM 3.5" Internal Floppy • AA Chipset • Built-in TV modulator
- Alpha-numeric keypad • Free 12 Months At-Home Maintenance

### INDI VALUE ADDED FREE

- 3 Superb Games • International Sports Challenge
- The Cool Croc • Paradroid 90 • Zapsac and Zappo T-Shirt.

### INDI PRICE

**£379.99 or from £14.47\* per month**

(\* Credit price based on 36 monthly payments APR 29.8%. Total repayment £520.92 and 90 day deferred payments)

60/80 Hard Disk upgrades available on any A1200. Upgrade includes full Wang warranty on A1200 and Hard Disk. Phone for a quote.

## AMIGA RECOMMENDED PERIPHERALS & ACCESSORIES



**AMIGA 1084/5T COLOUR/STEREO MONITOR** Commodore original and best selling colour/stereo monitor is fully compatible with all Amiga computers. This latest model now features the new 'Swivel' and 'Tilt' stand for total ease of use. Without doubt the best value for money monitor available. **INDI PRICE £189.99**  
 If purchased with A600/A1200 **INDI PRICE £179.99**

**ZAPPO EXTERNAL 3.5" DRIVE** A high quality external 3.5" drive for use with A500/A500+ / A600/A1200. Exceptional value for money product. **INDI PRICE £59.99**

**A600/A1200 SMART CARDS** Credit card style RAM card utilising A600/A1200 PCMCIA slot. **2Mb SMART CARD £129.99**  
**4Mb SMART CARD £199.99**  
 Comes with lifetime guarantee.



**ZAPPO 601 RAM UPGRADES (A600)**  
**ZAPPO 601 NC-512K** RAM Upgrade no clock **£29.99**  
**ZAPPO 601 C-1Mb RAM** Upgrade with clock **£49.99**

**ROCTEC GENLOCK** Cost effective video overlay for all Amigas. **INDI PRICE £69.99**



**MICROBOTICS MBX1200 FLOATING POINT AND 32-BIT WIDE MEMORY EXPANSION FOR THE NEW AMIGA 1200** The MBX1200 is offered to Amiga 1200 owners as a cost effective, high quality upgrade solution to provide a Motorola 68881/68882 floating point unit and to support the installation of up to eight megabytes of 32bit wide Amiga FastRAM. Speeds up FPU operations by as much as 55 times that of the native A1200. MBX1200 permits the A1200 user to realise the full potential of his system and software. (Now available with real time clock add £10.00 to each option). **INDI PRICE Basic Co-Processor £135.99**  
**4 MEG £299.99** **8 MEG £399.99**

**3 Top quality JOYSTICKS** recommended for use with any Amiga product **PYTHON 1 RRP £14.99**  
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**MAVRICK** Arcade style/microswitched joystick **£12.99**  
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**MULTISTART II ROMSHARER + 1.3 ROM** Enables use of Kickstart V2.0 and V1.3 ROMs. Giving access to older software that doesn't work under new operating system. Easy to install. Compatible with A500/A500+ / A600. **INDI PRICE £44.99**



**COMMODORE MPS 1230** A high quality 9 pin Dot Matrix Printer with paper & tractor feed and is fully compatible with Epson FX80 and IBM Industry Standards. High speed 120 CPS draft mode and an NLQ mode of 25 CPS. **INDI VALUE ADDED FREE**  
**D. PRINT** – Design greetings cards, letters and posters.  
**AMIGA LOGO** – Educational and programming language.  
**AMIGA VISION** – Multimedia Authoring system – for video, animation, sound, speech, graphics and text. **INDI PRICE £134.99**



**COMMODORE MPS 1270 INK JET PRINTER** Commodore's own ink jet printer. Whisper quiet yet prints at an amazing 160CPS. Possibly the best value ink jet available on the market. Especially at this price!!! **INDI PRICE £94.99**  
 (A500/A500+ / A600/A1200/C64 Compatible)

**1270A – REPLACEMENT INK JET CARTRIDGE INDI PRICE £12.99**

PRINTER PAPER AVAILABLE SEE FACING PAGE

## AMIGA A600



12 MONTHS AT HOME SERVICE

**A600 – SD** A single drive Amiga for those of you requiring a basic A600 at a very competitive price.

**PACK INCLUDES:** A600 single drive, built-in TV modulator, 1Mb memory. 12 months at home service.

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- Kick Off 2 • Pipemania • Space Ace • Populous • Microswitched joystick

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**PACK INCLUDES:** • A600 Hard Disk (20Mb) • 1Mb Memory • Epic • Rome • Myth • Trivial Pursuit • Amiga Text • Deluxe Paint III

• 12 months at home service

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- Micro Switched Joystick • Lockable Disk Box • Disk Wallet
- 10 Blank Disks • Kick Off 2 • Pipemania • Space Ace • Populous
- Zapsac Carry Case • Zappo T-Shirt.

**£26.00**

## THE WILD, THE WEIRD AND THE WICKED

A600 is an ideal starter pack containing a considered mix of software, making the most of the Amigas amazing capabilities.

**COMES WITH AN EXTRA 512K RAM EXPANSION FREE!!!**

**PACK CONTAINS:** • A600 single drive • Built in TV Modulator

- 1Mb Memory
- 512K RAM Expansion
- Pushover: Grandprix
- Silly Putty: Deluxe Paint III
- Mouse and Manuals.

**£289.99**



**TERMS AVAILABLE OVER 6, 12, 18, 24 & 36 MONTHS SUBJECT TO STATUS.  
WHY NOT RING FOR A QUOTE. SAME DAY RESPONSE. (SEE EXAMPLE).**

## Panasonic *Quiet Colour* Printing

We researched the colour printer market in great depth to find a colour printer good enough to cope with Amiga's powerful graphic output, yet at an affordable price. We found the perfect printer in the Panasonic KX-P2180 + KX-P2123 quiet printers.

We then considered that if you were going to buy a Panasonic printer, you would probably need a quality word processing package to use with it. We found that too, in 'Wordworth', yet at a retail price of £129.99 we thought that might be a little too expensive on top of your printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every Panasonic printer. How's that for added value?

### Panasonic

### KX-P2180



The new Panasonic KX-P2180 9 pin quiet colour printer. Produces crisp clear text in mono or in 7 glorious colours with new quiet technology. The new KX-P2180 is typically 15dBA quieter in operation, than the competition.

- **Fast Printing Speeds** 192CPS Draft and 38 CPS NLQ
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta and black)
- **QuietPrinting** Super quiet 45-48dBA sound level (most matrix printers are typically in excess of 60dBA)
- **6 Resident Fonts** Over 6,100 type styles using Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts
- **3 Paper Paths** Paper handling from bottom, top and rear for total flexibility
- **1 Year Warranty** for total peace of mind.

**\*WORDWORTH COMPLETELY FREE! WITH PANASONIC QUIET PRINTERS** The writers choice. The ultimate word processor for AMIGA computers. Wordworth is undoubtedly the ultimate word/document processor for the full range of AMIGA computers. The graphical nature of WORDWORTH makes producing documents faster and easier, with the enhanced printing fonts (including full Panasonic KX P2180 and KX P2123 colour printing support), Collins spell checker and Thesaurus, no other word processor comes close. "Without doubt this is one of the best document processors for the AMIGA. Today." (Amiga Format).  
**NORMAL RRP £129.99 inc. vat**

#### INDI PRICE

**£199.99**

### Panasonic

### KX-P2123



The new high performance Panasonic KX-P2123 24 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price.

- **Fast Printing Speeds** 192 CPS draft, 64 CPS LQ and 32 CP SLQ.
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta and black)
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- **7 Resident Fonts** Over 152,000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts
- **24 PIN Diamond Printhead** High performance and high quality output
- **1 Year Warranty** for total peace of mind.

#### INDI PRICE

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## Panasonic LASER PRINTERS

### KXP-4410 LASER PRINTER



**LOW INTEREST  
CREDIT AVAILABLE  
PHONE FOR QUOTE**



**WORDWORTH COMPLETELY FREE!**  
WITH PANASONIC LASER PRINTERS  
The writers choice. The ultimate word processor for AMIGA computers.  
**NORMAL RRP £129.99 inc. VAT**

### KXP-4430 LASER PRINTER



Once again Indi have joined together with Panasonic to offer all Amiga owners the most outstanding Laser Printer offer ever. We are now able to offer high quality, professional laser printing at very affordable prices. We are also giving away a free copy of Wordworth with every Panasonic Laser Printer purchased (RRP £129.99). Whether you're looking for a laser printer to handle word processing, DTP, presentation or complex graphics applications - the Panasonic range offers you the power to meet your requirements.

#### KXP-4410

- 5 pages per minute
- 28 resident fonts
- Optional 2nd input bin (total printer capacity 2x200 sheets)
- Low running costs
- Parallel interface
- Optional memory expansion to 4.5Mb

(0.5Mb as standard)  
• HP Laserjet II Emulation  
**RRP £992.00**  
**INDI PRICE**  
**£499.99** inc. VAT  
**WORDWORTH COMPLETELY FREE WITH LASER PRINTERS**



#### KXP-4430

- Satinprint (optimum resolution technology)\*
- 5 pages per minute
- HP Laserjet III Emulation, PCL 5
- 8 scalable fonts & 28 bitmap functions
- Optional 2nd input bin (total printer capacity 2x200 sheets)
- Optional memory expansion to 5.0Mb (1Mb as standard)

**RRP £1286.00**  
**INDI PRICE**  
**£699.99** inc. VAT  
**WORDWORTH COMPLETELY FREE WITH LASER PRINTERS**

\* (Satinprinters use optimum resolution technology to produce truly outstanding print quality. This software technique smooths away traditional jagged edges on curved characters and lines by varying the printed dot size and position).

## Panasonic PRINTER ACCESSORIES



**1) PANASONIC AUTOMATIC SHEET FEEDER**  
Automatic Sheet Feeder for KXP2180/KXP2123 holds 80 A4 sheets. **INDI PRICE £89.99**

**2) PRINTER DUST COVER**  
Specially tailored quality dust cover for Panasonic KXP2180/KXP2123 printer. **INDI PRICE £8.99**

**3) PRINTER STAND**  
2 piece printer stand. **INDI PRICE £9.99**

**4) PAPER PACK**  
500 sheets quality A4 paper. **INDI PRICE £9.99**

**5) CONTINUOUS PAPER**  
2000 sheets 1 part listing paper. **INDI PRICE £19.99**

**6) PARALLEL PRINTER CABLE**  
To be used when connecting Amiga to Panasonic Printer. **INDI PRICE £8.99** (£5.99 if purchased with printer)

**7) PANASONIC COLOUR RIBBON**  
Colour ribbon for KXP2180/KXP2123. **INDI PRICE £18.99**

**8) PANASONIC BLACK RIBBON**  
Black ribbon for KXP2180/KXP2123. **INDI PRICE £9.99**

#### SAVE ££££'s ON THE FOLLOWING ACCESSORY PACKS

**PACK 1 PANASONIC COLOUR RIBBON PACK**  
Contains 6 colour ribbons for KXP2180/KXP2123. **RRP £119.99 INDI PRICE £89.99 SAVE £30.00!!!**

**PACK 2 PANASONIC RIBBON PACK**  
Contains 2 black and 4 colour ribbons for KXP2180/KXP2123. **RRP £99.99 INDI PRICE £69.99 SAVE £30.00!!!**

**PACK 3 PANASONIC DELUXE ACCESSORY PACK**  
Contents = Automatic Sheet Feeder, 2x black ribbons, 2x colour ribbons, 1x dust cover, 2 piece printer stand. **RRP £169.99 INDI PRICE £139.99 SAVE £30.00!!!**

Add £2.50 carriage to all printer accessories or combinations thereof.



**12 MONTHS INTEREST FREE CREDIT AVAILABLE ON CDTV EXTERNAL HARD DISK  
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## AMIGA CDTV

## THE MULTIMEDIA COMPUTER TOTAL HOME

### ENTERTAINMENT SYSTEM



**COMMODORE AMIGA CDTV**  
THE MULTIMEDIA-COMPUTER



MONITOR NOT INCLUDED



The problem with any new product is that it always takes time for everyone to realise its full potential. CDTV is no exception and in our opinion everything we have read does a pretty poor job of explaining just what CDTV can do and why it is so exciting.

#### THE INDI GUIDE TO CDTV

**IT'S A CD PLAYER** — Yes, it will play all your Primal Scream, Pavarotti, Pink Floyd and any other CD you care to mention in superb high quality stereo, with remote infra red control.

**IT'S AN AMIGA** — Plug in the keyboard, switch on the external disk drive and the colossal range of inexpensive Amiga software can be used on your CDTV.

**IT'S A MULTIMEDIA SYSTEM** — Just imagine, stereo sound, images and text all on screen. It asks a question, you respond, it responds — truly, interactive! Each CD disc holds hundreds of megabytes of data with instant optical access. The whole of

Hutchinson's Encyclopedia fits onto 1 disc. This interactive system is a unique aid for Education, Business or Leisure.

The future is here!

**PACK CONTENTS AS STANDARD** • Amiga CDTV Player • CDTV keyboard • CDTV 1411 3.5" Disc Drive • CDTV Infra red remote controller • CDTV wired mouse • CDTV Welcome Disc • Manuals • Fred Fish CDTV

**INDI VALUE ADDED FREE** • Lemmings CDTV (£34.99) • Blues Brothers (£12.99) • Pipemania, Populous, Kickoff 2, Space Ace (£122.52)

CDTV CONNECTS DIRECTLY TO YOUR TV SET



**INDI PRICE**

**£399.99**

## AMIGA CDTV ACCESSORIES



**THE BRICK-ETTE** Just plug in the Brick-ette and use any wired Amiga compatible joystick, mouse or trackball device on the Commodore CDTV. The built-in 8 bit Micro Processor gives the Brick-ette big smarts in a tiny package and makes it easy to use just plug into the remote port and it is ready to go with real time mouse or joystick movement

on your CDTV. No loading of driver programs or software. No switches for mouse or joystick. Special settings (with mouse) allow you to blast away with three rapid fire modes & dual fire buttons. Comes complete with Python Micro Switched Joystick.

**INDI EXCLUSIVE £49.99**

With two Joysticks **£59.99**



**BLACK 1084S MONITOR**

At last the CDTV Monitor you have been waiting for. The original and best selling colour/stereo monitor from Commodore is now available in black to complement your CDTV.

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(or £179.99 when purchased with CDTV Multi-Media pack).



If you are thinking of buying CDTV or already own one you'll be pleased to know that INDI stock all CDTV accessories and software that are available from manufacturers. We believe in CDTV and we therefore continue to support this exciting product. You will always have a source of product for your CDTV from INDI.

L to R:

CDTV Encore SCSI Controller+Internal Mount Kit

**£109.99**

CDTV Internal Genlock

**£149.99**

Black 1084S Colour Stereo Monitor

**£189.99**

(When purchased with CDTV Multi-Media Pack)

**£179.99**

CDTV Remote Mouse

**£49.99**

Scart TV/Monitor Lead (inc. Stereo Phono Lead)

**£14.99**

Megachip — 1Mb Upgrade ChipRAM Upgrade

**£159.99**

for CDTV

## AMIGA CDTV EXTERNAL HARD DISK DRIVE

You've got the CDTV, you've got the keyboard and the floppy disk drive — for a total computer solution all that's needed is an ultra fast hard disk drive.

The CDTV-HD unit boasts a massive 65Mb of hard disk storage with lightning fast access times through its SCSI interface. The unit comes complete with Workbench 1.3 and all necessary cables.



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**INDI PRICE**

**£269.99**

## AMIGA CDTV SOFTWARE

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prices include carriage

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Dinosaurs for Hire **£14.99**  
Hound of the Baskervilles **£29.99**  
Psycho Killer **£29.99**  
Sherlock Holmes, Consulting Detective **£39.99**  
Sim City **£29.99**  
Trivial Pursuit (PAL) **£49.99**  
Wrath of the Demon **£29.99**  
Team Yankee **£34.99**  
Raffles **£34.99**  
Prehistorik **£34.99**  
Snoopy (PAL) **£34.99**  
Town with No Name **£29.99**  
Lemmings **£34.99**  
European Space Simulator **£34.99**  
Fantastic Voyage **£34.99**  
Global Chaos **£29.99**  
Turrican I **£29.99**  
Turrican II **£29.99**

Guy Spy **£29.99**  
Cover Girl Poker **£24.99**  
Logical **£25.99**  
Prey **£34.99**  
Curse of Ra **£24.99**  
Space Wars **£29.99**

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Remix **£29.99**  
Karaoke Fun Hits I **£14.99**  
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Voice FX **£19.99**

### REFERENCE

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Complete Works of Shakespeare **£29.99**  
Illustrated Holy Bible **£29.99**  
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WANT THE BEST IN PROFESSIONAL AMIGA WHY NOT TAKE ADVANTAGE OF THE CREDIT DEALS AVAILABLE (SUBJECT TO STATUS). CREDIT AVAILABLE ON 6, 12, 18, 24, 36 MONTHS. WHY NOT RING NOW FOR A QUOTE. SAME DAY RESPONSE.

SAVE £££'s  
on this offer

## PROFESSIONAL AMIGA



The A1500 is the ultimate home computer for the whole family and is designed to cover every computing requirement. INDI are able to offer you exclusive deals on this outstanding product in various configurations and bundles. All configurations come complete with the following software and accessories:-

### FEATURES:

- Fully functional keyboard with numeric pad separate from CPU
- Includes 2 x 3 1/2" disk drives as standard with 5 1/4" Disk Bay.
- Integral memory and card expansion capabilities (most cost effective expansion route)
- Work bench 2.00 and Kickstart 2.04.

### CONTENTS:

- Keyboard, mouse, reference manual, Puzznic, Toki, Elf (Games), D Paint
- The Works (Platinum edition: Wordpro, Spreadsheet, Database) Joystick

III (Graphics Package), Home Accounts, The Works (Platinum edition: Wordpro, Spreadsheet, Database) Joystick  
**AMIGA A1500 FEATURED** (see photograph above) • 52 Mb SCSI Hard Disk • Pack now includes 1084ST Monitor & Panasonic KX-P2123 24 pin colour printer.

**INCLUDED FREE** Amiga Vision and Wordworth Worth £229.99

Other 1500 configs available at very competitive prices. Phone for details.

LOW INTEREST  
CREDIT AVAILABLE  
PHONE FOR QUOTE

## PHONE FOR BEST PRICE

24 BIT  
GRAPHIC  
SYSTEM



NOW  
INCLUDES  
IMAGINE 2  
WORTH  
£299.99  
FREE

**OPAL VISION 24 BIT GRAPHIC SYSTEM FOR THE AMIGA 1500/2000/3000/4000.** If you have an Amiga (1500/2000/3000/4000) you must have OpalVision with the ability to turn your system into a tailor-made 24 bit workstation, complete with Genlock, Frame Grabber, Chroma Key, Flicker Fixer, Pip, True 24 bit Double Buffered Display, Video Switcher, Broadcast Resolution and of course the unique DVEs, the Opal is quite simply the only choice for any 24 bit all rounder who needs a system that will grow with your imagination and needs. Quite simply, it's a spectacular product. Contents: Opal Board, Opal Paint - 24 bit graphic creation tool, Opal presents - powerful presentation package, Opal Vision Hotkey - controls and manages OpalVision and Amiga Graphics, Opal Animate - animation software package, King of Karate - the world's first 24 bit graphics computer game. **A VERY SPECIAL OFFER FREE IMAGINE 2.0 Software.** For a limited period only, INDI direct are offering a very special OPALVISION bundle, that now includes a copy of

IMAGINE 2.0 worth £299.99 absolutely free. Imagine represents the state-of-the-art in 3D image processing that is able to utilize the performance of the OPALVISION board and render images in full 24-Bit colour. Now you can have the very best 24-Bit painting software, and the very best in 3D rendering software when you purchase OPALVISION. Hurry this is a limited promotion, while stocks last. **INDI PRICE PHONE FOR BEST PRICE ££££**

**COMMODORE 1960 MULTI-SYNC MONITOR** A 14" high resolution monitor for use with A1500/A2000/A3000/A4000. **INDI PRICE PHONE FOR BEST PRICE ££££**

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